

City of Lafayette Staff Report

For: City Council
By: Niroop K. Srivatsa
Date Written: July 24, 2008
Meeting Date: July 28, 2008
Subject: **Moraga Center Specific Plan: Review of the traffic section of the draft Environmental Impact Report**

Background

On June 16th, the Town of Moraga issued the draft Environmental Impact Report (DEIR) for the Moraga Center Specific Plan (MSP). Subject property is approximately 180+ acres in size and is located at Moraga Road and Moraga Way. The preferred plan calls for 720 residential units, 90,000 square feet of retail, 50,000 square feet of office, an 85 room hotel, 150 assisted and congregate care senior housing units, and a 30,000 square foot community center. The specific plan and DEIR can be viewed on the Town's website at www.ci.moraga.ca.us. Pertinent pages from the DEIR are attached.

The proposed project schedule is as follows:

August 1: end of public review period
August: preparation of Response to Comments on the DEIR
September 2: Moraga Planning Commission meeting
October 6: joint Planning Commission /Town Council meeting
October 22: adoption of MSP by Town Council

On June 23, 2008, the Lafayette City Council authorized the expenditure of a maximum of \$15,000 to conduct a peer review of the transportation section of the Moraga Center Specific Plan DEIR. The consulting firm TJKM Transportation Consultants was hired to conduct this peer review for the cities of Orinda and Lafayette. TJKM's analysis and comments are attached. They have been reviewed by the City's transportation consultant Chuck DeLeuw.

Both Lafayette and Orinda submitted letters to Moraga requesting an extension of the public review period which ends on August 1st. On July 22nd, the Moraga Town Council considered these requests but denied the request. However, according to the acting Moraga Town Manager, the Town Council did indicate that Moraga would be willing to receive comments after the deadline and would make their best efforts to respond to those comments.

Draft EIR Analysis

The analysis prepared by TJKM finds the DEIR lacking in its analysis of impacts on the streets and intersections in Lafayette and Orinda and staff concurs with this position. Staff has also reviewed the proposed mitigation measures and find them to be ineffective in some cases, unrealistic in others and non-existent in some cases.

Mitigation Measures

1. The DEIR finds that the Plan will have a significant impact on downtown Lafayette intersections (Page 4.F-52). The proposed mitigations are to enhance transit service in Lamorinda south of Highway 24 and to reduce the scope of the proposed Community Center program. While enhanced transit service is a commendable goal, it is unrealistic given the CCCTA's budgetary constraints. A more realistic mitigation measure would be to suggest that the Specific Plan proponents pay for increased, enhanced transit service from Moraga to Highway 24. The DEIR further finds that despite these two mitigation measures, the Plan and the alternatives would continue to have a significant and unavoidable impact on downtown Lafayette intersections. The reason cited in the DEIR is that the local jurisdiction (Lafayette) rejected several measures over the years to improve traffic flow on Moraga Road. The DEIR also states that when the Moraga General Plan was adopted, it was determined that the General Plan-level development would cause significant and unavoidable intersection impacts in Lafayette. Based on these reasons, additional mitigation is not proposed.
2. The DEIR finds that the Plan will have a significant impact on unsignalized Lafayette intersections (Page 4.F-55). To mitigate these impacts, the DEIR recommends the installation of traffic signals at the following intersections in Lafayette:
 - a. Deer Hill Road/Oak Hill Road
 - b. Glenside Drive/Reliez Station Road
 - c. Glenside Drive/Burton Drive
 - d. Pleasant Hill Road/Olympic Boulevard

The Lafayette General Plan calls for the signalization of only two of the intersections listed above - Deer Hill Road/Oak Hill Road and Pleasant Hill Road/Olympic Boulevard. The other two intersections are located in residential Burton Valley and requiring them to be signalized is incompatible with the character of the area and inconsistent with goals and policies of the Lafayette General Plan.

3. The DEIR finds that the Plan will create adverse vehicular impacts on Pleasant Hill Road, a Route of Regional Significance (Page 4.F-66). No mitigation is proposed.

Staff has not had the opportunity to forward its analysis on the mitigation measures to TJKM. We will ask TJKM to incorporate the comments listed above and those made at the July 28th Council meeting in a final report that will be submitted to Moraga with the Mayor's letter.

In summary the City's consultants and staff find that the transportation section of the DEIR fails to fully analyze impacts on the streets and intersections in Lafayette and offers unrealistic or ineffective mitigation measures.

Recommendation

Authorize the Mayor to sign and forward the attached letter and TJKM report to the Town of Moraga.

Attachments

Draft letter to Moraga

TJKM report dated July 24, 2008

Sections from the DEIR



DRAFT

CITY COUNCIL

Mike Anderson, Mayor
Don Tatzin, Vice Mayor
Brandt Andersson, Council Member
Carl Anduri, Council Member
Carol Federighi, Council Member

July 29, 2008

Mayor Lynda Deschambault
Town of Moraga
329 Rheem Blvd.
Moraga, CA 94556

Dear Mayor Deschambault:

Thank you for giving the City of Lafayette the opportunity to submit comments on the draft Environmental Impact Report (DEIR) for the Moraga Center Specific Plan. Although this project lies within the town limits of Moraga, its traffic impacts on Lafayette will be significant. Attached for your consideration is a list of comments and concerns prepared by our consultants TJKM Transportation Consultants. The analysis conducted by TJKM indicates that there are several deficiencies in the DEIR including:

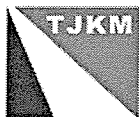
- ⊕ Failure to fully analyze the Specific Plan's impacts on the roadways and intersections in Lafayette and Orinda.
- ⊕ Failure to analyze the impacts of construction traffic on the regional road system.
- ⊕ Failure to conduct level-of-service analysis during the heavily congested afternoon school peak period.
- ⊕ Assuming project trip internalization rates that are too high and trip generation rates that are low. This produces an overly optimistic picture of the traffic impacts of the Plan on downstream jurisdictions.

We are also gravely concerned that the DEIR lacks effective mitigation measures that would reduce the impacts of the Plan on downstream jurisdictions. We request that the concerns and comments documented in the attached report be fully addressed by the EIR consultants. Thank you, again, for the opportunity to offer our comments.

Sincerely,

Mike Anderson
Mayor

Cc: Lafayette City Council



Vision That Moves Your Community

Transportation
Consultants

July 24, 2008

Ms. Niroop Srivatsa
City of Lafayette
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Lafayette, CA 94549
Via E-mail Only: nsrivatsa@ci.lafayette.ca.us

Subject: Peer Review of "Moraga Center Specific Plan Draft Environmental Impact Report"

Dear Niroop:

TJKM is pleased to provide you with this peer review of the Transportation section of the Moraga Center Specific Plan (MSP) Draft Environmental Impact Report (DEIR) dated June 16, 2008, prepared by Fehr and Peers. In general, the report is a comprehensive traffic analysis of the proposed project in accordance with the guidelines established by the Contra Costa County Transportation Authority (CCTA), Town of Moraga, City of Lafayette and the City of Orinda. The peer review findings are meant to be part of the study responses by the Cities of Orinda and Lafayette during the DEIR public review comment period.

Listed below are the specific comments on the report:

Trip Generation

- MSP trip generation rates are based on a June 2007 Fehr and Peers document, *Effects of Planned Development at Moraga Town Center on Community-Wide Travel Patterns*. The rates in this document are based on a wide variety of sources, including the Contra Costa Transportation Authority (CCTA) model, the Bay Area Travel Survey (BATS) and the 2000 Census. However, the text and tables do not clearly outline the steps performed to generate the trip rates or how each data source was used specifically.
- Retail trip generation for the proposed MSP was based on Fehr and Peers' analysis for the Town of Moraga General Plan contained in the above June 2007 study. The trip rates in this study were based on the existing Moraga Shopping Center, which at the time of the analysis was not fully occupied. Using the same rates for future General Plan buildout conditions is problematic, given that residential unit totals in Moraga are expected to increase from existing conditions to buildout. When considering this issue, it would be reasonable to expect that retail rates under buildout would be higher than those used for buildout in the Specific Plan analysis.
- TJKM used the seventh edition of *Trip Generation* from the Institute of Transportation Engineers (ITE) to estimate expected trip generation for the proposed MSP. ITE has compiled the results of trip generation research from over 4,250 individual land use studies throughout the United States and Canada. The proposed project's estimated trips based on ITE rates are shown in Table I. It is expected that the proposed project will generate approximately 495 trips during the a.m. peak hour and 824 trips during the p.m. peak hour. As shown in Table I, based on standard ITE trip generation rates for the proposed MSP land uses, p.m. peak hour trip generation is significantly higher than the trip generation estimated in Table I2B of the June 2007 study used in the DEIR analysis.

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Table I: Project Trip Generation

Proposed Project	Land Use (ITE Code)	Size	Daily Rate	Daily Trips	A.M.					P.M.				
					Trip Rate	In: Out Ratio	In	Out	Total	Trip Rate	In: Out Ratio	In	Out	Total
Single Family	Single-Family Detached (210)	30 du	9.57	287	0.75	25:75	6	17	23	1.01	63:37	19	11	30
Multi-Family Residences	Residential Condo/ Townhouse (230)	300 du	5.86	1758	0.44	17:83	22	110	132	0.52	67:33	105	51	156
Workforce Housing	Residential Condo/ Townhouse (230)	50 du	5.86	293	0.44	17:83	4	18	22	0.52	67:33	17	9	26
St. Mary's Residences	Apartment (220)	50 du	T=6.01 (x)+150.46	451		20:80	6	23	28		65:35	29	16	45
Active Senior Residences	Senior Adult Housing- Detached (251)	300 du	3.71	1113	0.20	38:62	23	37	60	0.26	61:39	48	30	78
Assisted Residences	Assisted Living (254)	75 beds	2.66	200	0.14	65:35	7	4	11	0.22	44:56	7	9	17
Congregate Residences	Congregate Care Facility (253)	75 du	2.02	152	0.06	59:41	3	2	5	0.17	55:45	7	6	13
Retail	Shopping Center (820)	90,000 ksf	42.94	3865	1.03	61:39	57	36	93	3.75	48:52	162	176	338
Office	General Office Building (710)	50,000 ksf	11.01	551	1.55	88:12	68	9	78	1.49	17:83	13	62	75
Hotel	Hotel (310)	80 rooms	8.17	654	0.56	61:39	27	17	45	0.59	53:47	25	22	47
Total							222	273	495			432	392	824

Source: Trip Generation (7th Edition), Institute of Transportation Engineers

Internalization Assumptions

- The DEIR traffic analysis assumes project trip internalization rates that are too high. The Existing Conditions assumption that 38 percent of trips stay within the Town of Moraga is too high considering that 86 percent of service / office commuters travel outside the town and 76 percent of retail purchases made by Moraga residents are located outside Moraga. Similarly, the 60 percent project trip internalization rate under General Plan buildout is too high based on the commute and retail purchase assumptions.
- The daily internalization rates in the DEIR analysis are generally much higher than peak hour internalization rates, yet they were applied to both a.m. and p.m. peak hour project trip generation in the traffic study. Peak hour internalization rates should be calculated for both a.m. and p.m. peak hours and applied to the traffic study accordingly.
- TJKM executed the CCTA model for 2000 and 2030 to verify internalization rates within the Town of Moraga. TJKM found that in 2000, a.m. and p.m. peak hour rates are 28 and 35 percent, respectively. Internalization rates are expected to be very similar in 2030, with a.m. and p.m. peak hour rates of 26 and 35 percent, respectively. However, as mentioned above the Fehr and Peers cumulative assumptions assume up to 60 percent internalization in future conditions.

- To further verify internalization and trip rates assumed in the MSP traffic study, TJKM examined the existing and future land use assumptions in the CCTA model for the Specific Plan area. Table 2 illustrates the growth assumptions in the CCTA model for the traffic analysis zones (TAZs) that comprise the Specific Plan area. Within this area, the CCTA model estimates an increase of 300 residential units and increased commercial development with 235 additional employees. It should be noted that even though the model assumes increased development in the Specific Plan area, there is virtually no change in the internalization rates between 2000 and 2030.

Table 2: CCTA Land Use Information for the Specific Plan Area

Year	Residential		Commercial					
	Single Family	Multi Family	Retail	Service	Other	Agriculture	Manufacturing	Trade
	(du)	(du)	(emp)	(emp)	(emp)	(emp)	(emp)	(emp)
2000	24	1	258	231	138	18	23	7
2030	312	13	357	321	175	10	43	4
Increase	288	12	99	90	37	-8	20	-3

Notes: du – dwelling units; emp – Employee

Traffic Analysis

- One of the key data requirements for any level of service (LOS) analysis is the signal timing information. The DEIR should specify whether this information was gathered from the City, collected in the field, or optimized using Synchro. The timing information should be included along with other data requirements mentioned in this section.
- The delay index for all study corridors is calculated for the entire length, rather than at any specific corridor locations. This method does not assist in identifying the worst congestion points within each corridor.
- LOS analysis was not conducted for the afternoon school peak period at intersections that are adjacent to Lamorinda schools.
- The intersection of Glorietta Boulevard/Rheem Boulevard has been incorrectly coded as a One-Way Stop controlled intersection instead of an All-Way Stop controlled intersection. LOS analysis of this intersection should be updated accordingly.
- Level of service and delay shown in Table 4.F-12 of the DEIR does not match the HCM results (Synchro output) submitted to the Town of Moraga for the intersection of Bollinger Canyon Road and St. Mary's Road.
- Truck traffic routes and impacts during construction of Moraga Center are not identified for any of the project alternatives. Traffic indices (TIs) and other factors relative to construction truck traffic are not analyzed for the following primary gateways in Lafayette to/from State Route (SR) 24:
 - Acalanes Road
 - Moraga Road
 - St. Mary's Road
 - Pleasant Hill Road / Olympic Boulevard / Reliez Station Road / Glenside Drive
- Expected commercial truck routes via the primary gateways to/from SR 24 serving Moraga Center after construction and expected impacts are not identified for any of the project alternatives. Traffic indices (TIs) that would provide information on expected truck loading on the gateway roadways are not analyzed.

- The DEIR traffic analysis output shows that for each study intersection, an average peak hour factor (PHF) was applied to the overall intersection, rather than different PHFs being applied to individual movements based on peaking characteristics. A PHF for an individual vehicular approach or movement should be applied when that approach or movement has sharp peaking characteristics or low volume in comparison to the intersection as a whole. This is especially relevant for all one-way stop and two-way stop controlled intersections. It should be noted that the neighboring cities of Orinda and Lafayette have numerous unsignalized intersections on arterial streets that do not meet traffic signal warrants. If a PHF different from the overall average was used for the side street movements at these intersections, higher side street delays may result. This could in turn trigger a significant impact at these intersections or possibly cause them to meet the delay warrant for signal installation.

Project Impacts and Mitigation Measures

- DEIR analysis results for the intersection of Moraga Way / Ivy Drive show a significant impact under Existing Plus Project Conditions. However, this is not identified in the DEIR.
- Increased transit service as a mitigation measure does not sufficiently reduce trips to mitigate the operating conditions at all impacted signalized intersections. This is because the analysis assumes fewer than 10 transit trips (given expected increases in area transit service), whereas the project itself adds much higher vehicle trips at the impacted intersections.
- Similarly, limited use of the Community Center as a mitigation would result in a minimal reduction of trips at the impacted intersections. This is because expected trip generation for the Community Center is high only during the p.m. peak period, whereas these intersections are impacted during the a.m. peak period.
- The study does not consider other mitigation measures that are consistent with the Lamorinda Action Plan, such as:
 - Corridor-wide Traffic Signal Coordination
 - Fair share contribution to the implementation actions identified under the Pleasant Hill Road Action Plan
 - Existing improvement plans, such as capital improvement program (CIP) lists in the City of Lafayette. These could identify other potential improvements for the intersections being considered for mitigation in the study.
- The entire length of the Glenside Drive, Reliez Station Road and Olympic Boulevard corridors should be evaluated as part of the mitigation measures. For instance, adding signals at N. Glenside Drive and Burton Drive, S. Glenside Drive and Reliez Station Road, and St Mary's Road and S. Glenside Drive under cumulative conditions would not be effective, since the All-Way Stop would remain at the intersection of Glenside Drive and Los Palos Drive and no upgrades are proposed at the intersection of Glenside Drive and Michael Lane.
- The traffic analysis has not considered or commented on the impact of the project on the flashing signals at the intersection of Reliez Station Road and Diane Court and the trail crossing on S. Glenside Drive, west of Burton Drive.
- Qualitative discussion or comments on the impact of the project on the following three Lafayette intersections should be included as part of the DEIR:
 1. Moraga Road and Old Jonas Hill Road
 2. Moraga Road and Silver Springs Road
 3. Moraga Road and Hamlin Road

Other Issues

- In the City of Lafayette's DEIR scoping comments sent to the Town of Moraga on September 4, 2007, several Lafayette intersections were recommended for analysis. However, three (3) Lafayette intersections located along expected routes to Moraga Center were not included in the traffic analysis:
 1. St. Mary's Road at Rohrer Drive
 2. Reliez Station Road at Olympic Boulevard
 3. Reliez Station Road at Glenside Drive South (at Michael Lane intersection)
- The study does not include a collision analysis, which would help evaluate potential project safety impacts by identifying existing collision patterns and qualitatively discussing the impact of the project on collision rates.
- The traffic impact analysis does not include the construction of the 4th bore to the Caldecott Tunnel. This would affect the traffic analysis for the Cumulative Conditions.
- Under Mitigation 4F-5 (page 4.F-58), the DEIR states that "... the Project applicant shall fully fund and construct the mitigation measure and shall be reimbursed for the portion beyond their fair share contribution from future available funding sources." The mitigation measure includes the installation of four signals in the City of Lafayette. Since these signal installations would be subject to the City of Lafayette's approval for inclusion in the Lamorinda fee program, it may be better to state that the Project Applicant shall be required to set aside fair share funds for City of Lafayette use as corridor improvements are approved and implemented.

TJKM appreciates the opportunity to provide preliminary review findings on the Moraga Specific Plan DEIR traffic analysis. Please call (925) 463-0611 if you have any questions.

Thank you.



Joy Bhattacharya, P.E., P.T.O.E.
Senior Associate



Andrew Kluter, P.E.
Senior Engineer

MORAGA CENTER SPECIFIC PLAN
DRAFT ENVIRONMENTAL IMPACT REPORT

offices and financial institutions. The area is served by County Connection bus service with direct service to the Orinda Bart Station that is 4.8 miles from the MCSP area.

Table 2-1 provides a summary of baseline development proposed within the MCSP area.

Table 2-1

Development Potential Under the MCSP

Land Use Category	Quantified Development Objectives
Retail & Entertainment	90,000 square feet
Focused Office	50,000 square feet
Bed & Breakfast	10 rooms
Boutique Hotel	75 rooms
Congregate Care (20-40 /ac)	75 units
Assisted Living (20-40 /ac)	75 units
Active Senior (12-24 /ac)	300 housing units
Conventional Single Family (3-5 /ac)	20 housing units
Student/Faculty Housing (12-24 /ac)	50 housing units
Workforce Housing (12-24 /ac)	50 housing units
Compact Single Family (7-12 /ac)	300 housing units
Housing Subtotal:	720 housing units

Table 2-1 identifies the anticipated baseline mix of land uses within the Specific Plan. However, in order to maintain a flexible land use program that can adapt to changing market opportunities, while avoiding any increase in adverse traffic effects within neighboring communities, beyond that established through the Moraga 2002 General Plan EIR (as identified in Specific Plan Goal #5) a sliding scale of quantified residential land use categories has been presented in a MCSP Conceptual Land Use Matrix (see Table 2-2 below). The matrix provides for reassignment of permissible residential land use units, subject to a finding of conformity with the defined baseline of General Plan peak hour external traffic. As discussed in more detail in Chapter 4.F, Transportation, the General Plan baseline (analyzed as Alternative 2 in this EIR) reflects the sum of outbound AM peak hour external trips and inbound PM peak hour external trips associated with future development evaluated in the Moraga 2002 General Plan EIR. The matrix provides for increases, within defined maximum limits, of any quantified land use subject to a decrease in other uses, such that the total external traffic budget remains below the defined threshold.

Table 2-2

MCSP Conceptual Land Use Matrix

Land Use	Minimum / Maximum Development	Proposed Project	Maximum SFH Development	Maximum SFH / SM Development	Maximum SFH / S Development	Maximum CT / SM Development	Trips per dwelling unit	Land Use Equivalents
Single-family homes (SFH)	20 / 60	20	60	60	60	20	10.6 / DU	20 SFH = 33 CT
Compact Residential Condo / Townhouse (CT)	100 / 300	300	235	135	100	300	6.4 / DU	1 C/T = 1 SM 10 CT = 17 S
St. Mary's Faculty/Staff/Student (SM)	100 / 200	100	100	200	100	200	6.0 / DU	10 SM = 16 S
Senior Housing (S)	140 / 520	300	300	300	520	140	3.7 / DU	16 S = 10 SM
Total Housing	360 / 780	720	695	695	780	660		
Retail	90,000 SF	90,000 SF					29.7 / 1,000 SF	Given the desired diversity in the commercial environment – no land use equivalents are proposed
Office	50,000 SF	50,000 SF					16 / 1,000 SF	
Hotel/Bed-and-Breakfast	85 rooms	85 rooms					8.2 / RM	
Congregate Care	75 units	75 units					2.0 / DU	
Assisted Living	75 units	75 units					2.7 / DU	

Source: Town of Moraga Planning, May 2008

Note: The Proposed Project identifies development potential within the Specific Plan area with respect to land use and number of units or square footage (SF). In order to achieve residential diversity within the Specific Plan area and respond to community needs and market forces, it is possible to construct alternate residential configurations as illustrated above without adversely impacting peak hour traffic. The above mix of residential units does not adversely affect peak hour traffic because consideration has been given in the land use equivalents to trip origin and destination. For example, single-family and compact residential condo/townhouse occupants are assigned a larger percentage of travel outside Moraga so those units can be exchanged for units that have fewer trips outside Moraga such as senior units and St. Mary's units but the senior and St. Mary's units cannot be exchanged for more single-family or compact residential units.

Table 2-3

MCSP Alternative Summary

	Proposed Project	Alternative 1: No Project	Alternative 2: GP Dev. Level	Alternative 3: 400 Unit	Alternative 4: 560 Unit
Senior Housing (20 du/ac)	240 (300) units	0 units	0 units	120 (150) units	184 (230) units
St. Mary's Faculty/Staff/Student Housing (12-20 du/ac)	80 (100) units	0 units	0 units	80 (100) units	80 (100) units
Compact Residential (10-12 du/ac)	300 units	0 units	0 units	100 units	165 units
Single-family homes (3-6 du/ac)	20 units	0 units	339 units	50 units	65 units
Residential total	640 (720) units	0 units	339 units	350 (400) units	494 (560) units
Retail	90,000 sf	0 sf	16,000 sf	50,000 sf	90,000 sf
Office	50,000 sf	0 sf	38,000 sf	50,000 sf	50,000 sf
Hotel/Bed-and-Breakfast	85 rooms	0 rooms	0 rooms	50 rooms	50 rooms
Congregate Care	75 rooms	0 rooms	0 rooms	20 rooms	30 rooms
Assisted Living	75 rooms	0 rooms	0 rooms	40 rooms	60 rooms

Note: Senior Housing and St. Mary's Faculty/Staff/Student Residential units are shown with and without "a density bonus." Density bonus units are available for residential development types that can provide housing units that are affordable to low and moderate income families. Density bonus is not available for single family and compact residential condo/townhouse housing designations. The number of units presented in parentheses () are the total possible including "density bonus units."

2.4.2 Alternative 2. General Plan Development Level Alternative

Under the General Plan Development Level Alternative (Alternative 2), the number of new residential units would be consistent with that evaluated in the Moraga 2002 General Plan EIR. This alternative does not include the MCSP proposed Community Center because it was not specifically identified in the General Plan buildout for the MCSP area. Because this level of development was already analyzed and approved by the Town of Moraga, no new discretionary land use decisions would need to be taken by the Town. The maximum potential development "capacity" would be approximately 16,000 square feet of new community commercial space, 38,000 square feet of new suburban office space, and 339 conventional single-family housing units at varying densities (Table 2-3). The General Plan EIR assigned 323 residential units to the MCSP boundary identified in the Moraga 2002 General Plan. The MCSP being considered in this EIR includes an

4.F TRANSPORTATION, CIRCULATION, AND PARKING

This section addresses the transportation, circulation, and parking constraints on improvements and construction of facilities as part of the Moraga Center Specific Plan (MCSP) and alternatives.

4.F-1 ENVIRONMENTAL SETTING

Roadway Network

Regional vehicular access to the Project site is provided by State Route 24, while local access is provided via Moraga Way, Moraga Road/Canyon Road, St. Mary's Road, Camino Ricardo, School Street, and Country Club Drive. These roadways are described below.

State Route 24 (SR 24) is an eight-lane east-west freeway north of the Project site that connects to Interstate 680 (I-680) to the east and State Route 13 (SR 13) to the west. SR 24 has an Annual Average Daily Traffic (AADT) of about 186,000 vehicles (Caltrans, 2006) and four to six lanes in each direction near the Project site.

Moraga Way is generally a two-lane road that extends northwest-southeast between Moraga Road (in the Town of Moraga) and SR 24 in the City of Orinda. Within the Town limits, Moraga Way is a four lane road with left-turn lanes.

Moraga Road/Canyon Road is generally a two-lane north-south road. Moraga Road extends between Moraga Way in the Town of Moraga and Mount Diablo Boulevard in the City of Lafayette. Canyon Road is the extension of Moraga Road south of Moraga Way to Pinehurst Road in Alameda County.

St. Mary's Road is a two-lane north-south road that connects to Moraga Road (south) in the Town of Moraga, and Moraga Road (north) in the City of Lafayette.

Camino Ricardo is a two-lane north-south road that extends along the western frontage of the specific plan area. It intersects Moraga Way at a signalized intersection where it becomes St. Andrew's Drive into the Country Club area.

School Street is a two-lane north-south road that extends from south of the specific plan area near Canyon Road north into site. It currently ends north of Moraga Way.

Country Club Drive is a two- to four-lane east-west road that extends between St. Andrew's Drive and Canyon Road, and continues northeast outside the Project area. It has four lanes between School Street and Canyon Road, and two lanes west of School Street and east of Canyon Road. It has a landscaped median between St. Andrew's Drive and Canyon Road.

Transit Service

The site is located about 5 miles south of the Lafayette BART station and about 4.5 miles southeast of the Orinda BART station. Central Contra Costa Transit Authority (County Connection) provides bus service in the area.

County Connection

County Connection currently provides service to the specific plan area via Route 106. In addition, service is provided to St. Mary's College, about one mile northeast of the site, via Route 206. Combined these routes served about 700 daily riders in 2007. Specific route information is provided below.

Route 106

Route 106 operates between the Orinda and Lafayette BART stations via Moraga Way, Moraga Road, and St. Mary's Road. The route also serves the St. Mary's College. There are bus stops within the specific plan area along Moraga Way at Moraga Road, School Street, and Camino Ricardo.

Weekday service runs between 6:00 AM and 8:00 PM, with typical headways of 20 minutes during peak periods (6:30-9:30 AM and 4:00 -7:30 PM) and up to an hour in off-peak periods. Saturday service runs between 9:30 AM and 6:00 PM, with 6 buses a day (headways of between 90 and 120 minutes).

The Route 106 is considered a "core route." The 2007 ridership consisted of 36 percent students, 25 percent adults, 6 percent seniors, and 5 percent St. Mary's College students. An additional 20 percent were transfers to BART and 7 percent were transfers to other buses.

Route 206

Route 206 operates between St. Mary's College, the Lafayette BART station, and Rossmoor Shopping Center via St. Mary's Road, Mt. Diablo Boulevard, and Olympic Boulevard. Only weekday service is provided, and it is limited, with 3 westbound buses per day and 5 eastbound buses per day. The closest bus stop to the specific plan area is at St. Mary's College. Route 206 is considered a "select services" route, primarily oriented towards school service. Its ridership consists mainly of students.

Route 250 (Gail Rail Shuttle)

Route 250 operates between St. Mary's College and the Lafayette BART station via Moraga Road and Rheem Boulevard. Stops are limited to the BART station, St. Mary's College, and the Moraga Road intersection with Rheem Boulevard. Service is limited to Thursday, Friday, Saturday and Sunday.

Bay Area Rapid Transit (BART)

BART provides regional rail service throughout the East Bay and across the Bay to San Francisco and the Peninsula. The closest BART station to the Project site is the Orinda BART station, about 4.5 miles from the specific plan area. The Lafayette BART Station is about 5 miles from the area. The Pittsburg/Bay Point-SFO line provides service at both stations. During the peak hour, 18 trains arrive and depart each station.

Based on BART's most recent Station Profile Survey, most BART riders living in Moraga use the Orinda station. Average ridership originating or ending at the Orinda BART station in March 2008 was about 820 passengers during the morning peak hour (8:00 to 9:00 AM) and 720 passengers during the evening peak hour (5:00 to 6:00 PM). The total daily entries and exits at this station in 2008 were 5,650 passengers. In March 2008 maximum patron queues exiting the Orinda BART station during the PM peak hour were about 4 people with a maximum delay of ten seconds.

Bicycle/Pedestrian Network

Bicycle and pedestrian facilities can be classified into several general types, including:

- Class I Paths – These facilities are located off-street and can serve both bicyclists and pedestrians. Recreational trails can be considered Class I facilities. Class I paths are typically 8 to 10 feet wide excluding shoulders and are generally paved.
- Class II Bicycle Lanes – These facilities provide a dedicated area for bicyclists within the paved street width through the use of striping and appropriate signage. These facilities are typically 4 to 6 feet wide.
- Class III Bicycle Routes – These facilities are found along streets that do not provide sufficient width for dedicated bicycle lanes. The street is then designated as a bicycle route through the use of signage informing drivers to expect bicyclists.
- Sidewalks – The exclusive realm of pedestrians, sidewalks provide pedestrian access and circulation. Sidewalks can vary in width from 5 to 20 feet; wider sidewalks are typically found in heavily urbanized and downtown areas.

Moraga Way and Moraga Road are designated Class II facilities with striped bicycle lanes, although vehicles often park in the bike lanes on segments of both roads. Rheem Boulevard is a designated Class III bicycle route from Moraga Road to near the Town border. In addition, the Lafayette-Moraga trail, a Class I shared-use path, runs parallel to St. Mary's Road, School Street, and Canyon Road in the study area.

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. There are several signalized intersections in the vicinity of the Project site, including along Moraga Way at Moraga Road, School Street, and Camino Ricardo, and at the St. Mary's

Road/Moraga Road intersection. Each of these signalized intersections has pedestrian facilities; however, not all intersection crossings accommodate pedestrian movements because of conflicting vehicle movements or limited pedestrian facilities.

Traffic Data Collection

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at 51 study intersections in April 2005, May 2005, September 2006, October 2006, and September 2007 while area schools were in normal session to obtain existing traffic volumes. The intersection study locations are identified on Figure 4.F-1. The data count sheets for each intersection are provided in a separate document *Transportation Circulation and Parking Technical Worksheets for Moraga Center Specific Plan* available at the Town of Moraga offices.

The overall hour with the highest traffic volumes for all the intersections combined was identified as 7:45-8:45 AM and 5:00-6:00 PM. The AM and PM peak hour data used as the basis for the intersection operational analysis is provided in Appendix D. Traffic signal timing data was also collected for the signalized study intersections.

Existing Intersection Operations

The AM and PM peak hour existing traffic volumes were used with the existing lane configurations and signal parameters to calculate existing intersection operations and Level of Service (LOS). Methodologies in the *Highway Capacity Manual* (HCM) were used to quantify intersection operations at both signalized and unsignalized intersections. Refer to Appendix D for a description of the different level of service grades.

A traffic signal was assumed at the Ascot Drive/Moraga Road intersection in Moraga, which is currently unsignalized, because the Town has funding for signalization and is currently designing the signal. The HCM-based intersection analysis results (obtained from SYNCHRO software) indicate that 7 study intersections currently operate below established local standards. The complete list of study intersections and the resulting intersection LOS is shown in Table 4.F-1.

This analysis also examines the general correlation between peak hour traffic demand and the need to install a traffic signal. Table 4.F-2 identifies those unsignalized intersections that meet the peak hour traffic signal warrant. Seven study intersections meet the peak hour traffic signal warrant. The evaluation is a sub-set of the traffic signal warrants recommended in the Federal Highway Administration's *Manual on Uniform Traffic Control Devices* (as amended for use in California). This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated. The decision to install a signal should not be based solely upon the warrants, but should also take into account field conditions such as delay, congestion, approach conditions, driver confusion, future land use, or other evidence of the need for right-of-way assignment beyond that which could be provided by stop signs.

Figure 4.F-1a Study Area and Study Intersection Locations (Black and White)

Figure 4.F-1b Study Area and Study Intersection Locations (Black and White)

Table 4.F-1

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
Orinda Intersections								
1. Orinda Way at Santa Maria Way	Signal	AM	12	B	12	B	12	B
	CBD	PM	15	B	15	B	16	B
2. Camino Pablo at Santa Maria Way	Signal	AM	7	A	7	A	8	A
	CBD	PM	19	B	22	C	51	D
3. Camino Pablo at BART Driveways	SSS	AM	1 (16)	A (C)	1 (16)	A (C)	1 (24)	A (C)
	CBD	PM	2 (27)	A (D)	3 (28)	A (D)	22 (171)	C (F)
4. Camino Pablo at SR 24 EB Ramps	No Control	AM						
	CBD	PM	n/a	n/a	n/a	n/a	n/a	n/a
5. Camino Pablo at Brookwood Road	Signal	AM	58	E	64	E	92	F
	CBD	PM	98	F	115	F	163	F
6. Camino Pablo at Moraga Way	Signal	AM	13	B	13	B	15	B
	CBD	PM	17	B	18	B	21	C
7. Brookwood Road at Moraga Way	AWS	AM	18	C	18	C	23	C
	CBD	PM	15	C	15	C	24	C
8. Bryant Way at Moraga Way	SSS	AM	5 (17)	A (C)	5 (17)	A (C)	6 (20)	A (C)
	CBD	PM	6 (17)	A (C)	6 (17)	A (C)	6 (21)	A (C)
9. Glorietta Boulevard at Moraga Way	Signal	AM	80	F	88	F	123	F
	Suburban	PM	25	C	27	C	39	D
10. Ivy Drive at Moraga Way	Signal	AM	43	D	44	D	61	E
	Suburban	PM	24	C	24	C	30	C
12. Glorietta Boulevard at Rheem Boulevard	SSS	AM	11 (20)	B (C)	12 (22)	B (C)	17 (33)	C (D)
	Suburban	PM	5 (14)	A (B)	5 (16)	A (B)	7 (21)	A (C)

Table 4.F-1

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
Lafayette Intersections								
13. Deer Hill Drive at Oak Hill Road	AWS	AM	38	E	39	E	39	E
	Downtown	PM	41	E	47	E	60	F
14. Mt. Diablo Boulevard at Oak Hill Road	Signal	AM	27	C	28	C	31	C
	Downtown	PM	31	C	33	C	42	D
15. Deer Hill Drive at SR 24 Westbound Ramps	Signal	AM	32	C	33	C	44	D
	Downtown	PM	30	C	32	C	49	D
16. Deer Hill Drive at 1st Street	Signal	AM	12	B	12	B	14	B
	Downtown	PM	15	B	17	B	21	C
17. SR 24 Eastbound On-Ramp at 1st Street	No Control	AM	n/a	n/a	n/a	n/a	n/a	n/a
	Downtown	PM						
18. Mt. Diablo Boulevard at 1st Street	Signal	AM	30	C	31	C	33	C
	Downtown	PM	28	C	29	C	32	C
19. First Street at Golden Gate Way (East)	SSS	AM	6 (12)	A (B)	6 (12)	A (B)	6 (13)	A (B)
	Outside Downtown	PM	5 (10)	A (A)	5 (10)	A (A)	6 (11)	A (B)
20. First Street at Golden Gate Way (West)	SSS	AM	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)
	Outside Downtown	PM	4 (6)	A (A)	4 (7)	A (A)	4 (7)	A (A)
21. First Street at Moraga Boulevard	AWS	AM	9	A	9	A	10	A
	Outside Downtown	PM	9	A	9	A	9	A
22. First Street at School Street	SSS	AM	6 (13)	A (B)	6 (13)	A (B)	6 (14)	A (B)
	Outside Downtown	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (A)
23. Avalon Avenue at School Street	SSS	AM	2 (13)	A (B)	2 (13)	A (B)	2 (14)	A (B)
	Outside Downtown	PM	1 (10)	A (A)	1 (10)	A (A)	1 (11)	A (B)
24. Mt. Diablo Boulevard at Moraga Road /3/	Signal	AM	51	D	--	F	--	F
	Downtown	PM	53	D	--	F	--	F

Table 4.F-1**Baseline Intersection Level of Service (AM and PM Peak Hours)**

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
25. Moraga Road at Moraga Boulevard /3/	Signal	AM	--	E	--	F	--	F
	Downtown	PM	20	B	--	F	--	F
26. Moraga Road at Brook Street /3/	Signal	AM	--	E	--	F	--	F
	Downtown	PM	21	C	--	F	--	F
27. Moraga Road at School Street /3/	Signal	AM	42	D	--	F	--	F
	Downtown	PM	17	B	--	F	--	F
28. Moraga Road at St. Mary's Road (North) /3/	Signal	AM	34	C	--	F	--	F
	Downtown	PM	31	C	--	F	--	F
32. St. Mary's Road at Avalon Avenue	SSS	AM	2 (18)	A (C)	2 (19)	A (C)	2 (21)	A (C)
	Outside Downtown	PM	2 (19)	A (C)	2 (19)	A (C)	3 (24)	A (C)
33. St. Mary's Road at Topper Lane	SSS	AM	3 (25)	A (D)	3 (25)	A (D)	4 (32)	A (D)
	Outside Downtown	PM	2 (19)	A (C)	2 (19)	A (C)	2 (23)	A (C)
34. Glenside Drive at St. Mary's Road (North)	AWS	AM	12	B	12	B	13	B
	Outside Downtown	PM	10	A	10	A	11	B
35. Glenside Drive at St. Mary's Road (South)	AWS	AM	21	C	22	C	40	E
	Outside Downtown	PM	21	C	22	C	44	E
39. Glenside Drive at Reliez Station Road	AWS	AM	91	F	98	F	146	F
	Outside Downtown	PM	49	E	56	F	102	F
40. Glenside Drive at Burton Drive	AWS	AM	34	D	38	E	44	E
	Outside Downtown	PM	25	D	28	D	57	F
41. Pleasant Hill Rd at Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	Signal	AM	14	B	14	B	18	B
	Outside Downtown	PM	18	B	18	B	26	C
42. Pleasant Hill Rd at Old Tunnel Rd- SR 24 Eastbound Off-Ramp	Signal	AM	10	A	10	A	10	A
	Outside Downtown	PM	11	B	11	B	13	B

Table 4.F-1

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
43. Pleasant Hill Road at Condit Drive	Signal	AM	9	A	9	A	10	A
	Outside Downtown	PM	7	A	7	A	8	A
44. Pleasant Hill Road at Olympic Boulevard	AWS	AM	55	F	59	F	92	F
	Outside Downtown	PM	48	E	52	F	73	F
45. Happy Valley Road at Mt. Diablo Boulevard	Signal	AM	25	C	25	C	30	C
	Downtown	PM	35	C	35	C	39	D
Moraga Intersections								
11. Moraga Way at Moraga Road	Signal	AM	25	C	26	C	33	C
	Suburban	PM	28	C	30	C	38	D
29. Campolindo Drive at Moraga Road	Signal	AM	18	B	22	C	24	C
	Suburban	PM	14	B	17	B	20	B
30. Rheem Boulevard at Moraga Road	Signal	AM	21	C	21	C	23	C
	Suburban	PM	20	C	21	C	23	C
31. Moraga Road at St. Mary's Road (South)	Signal	AM	12	B	13	B	14	B
	Suburban	PM	12	B	12	B	14	B
36. Bollinger Canyon Road at St. Mary's Road	SSS	AM	1 (20)	A (C)	1 (21)	A (C)	5 (32)	A (D)
	Suburban	PM	1 (16)	A (C)	1 (17)	A (C)	3 (22)	A (C)
37. Rheem Boulevard at St. Mary's Road	SSS	AM	5 (25)	A (C)	6 (26)	A (D)	12 (59)	B (F)
	Suburban	PM	5 (26)	A (D)	5 (27)	A (D)	14 (79)	B (F)
38. St. Mary's Parkway at St. Mary's Road	SSS	AM	4 (15)	A (C)	4 (16)	A (C)	4 (18)	A (C)
	Suburban	PM	6 (15)	A (C)	6 (15)	A (C)	6 (18)	A (C)
46. Center Street at Rheem Boulevard	Signal	AM	8	A	9	A	9	A
	Suburban	PM	10	B	10	B	10	B
47. Moraga Road at Ascot Drive	Signal	AM	10	A	10	A	11	B
	Suburban	PM	8	A	8	A	9	A

Table 4.F-1

Baseline Intersection Level of Service (AM and PM Peak Hours)

Study Intersection	Control /1/ Designation	Peak Hour	Existing Baseline		Approved Baseline		Cumulative Baseline	
			Delay /2/	LOS	Delay /2/	LOS	Delay /2/	LOS
48. Moraga Road at Donald Drive	Signal	AM	11	B	12	B	13	B
	Suburban	PM	7	A	7	A	7	A
49. Moraga Road at Corliss Drive	SSS	AM	23 (200)	C (F)	28 (247)	D (F)	50 (444)	E (F)
	Suburban	PM	6 (59)	A (F)	7 (73)	A (F)	15 (162)	B (F)
50. Moraga Way at St. Andrews Drive	Signal	AM	11	B	11	B	13	B
	Suburban	PM	12	B	12	B	13	B
51. Moraga Way at School Street	Signal	AM	10	A	10	A	10	A
	Suburban	PM	11	B	11	B	12	B

Bold font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

/3/ These intersections were evaluated using the SimTraffic component of the SYNCHRO software to account for the field observed vehicle queue length fluctuations, school children crossings, left-turn conflicts, and unique signal timing parameters. Delay for LOS D or better based on the average of 5 random runs. Delay for LOS E or F is not reported because of variability between runs.

Source: Fehr & Peers, 2008

Table 4.F-2**Baseline Intersection Peak Hour Traffic Signal Warrants (AM and PM Peak Hours)**

Does the unsignalized intersection meet the peak hour traffic signal warrant criteria (Yes or No)?					
	Control /1/	Peak Hour	Existing Baseline	Approved Baseline	Cumulative Baseline
Orinda Intersections					
7. Brookwood Road at Moraga Way	AWS	AM	No	No	No
		PM	No	No	Yes
8. Bryant Way at Moraga Way	SSS	AM	No	No	No
		PM	No	No	No
12. Glorietta Boulevard at Rheem Boulevard	SSS	AM	Yes	Yes	Yes
		PM	No	No	No
Lafayette Intersections					
13. Deer Hill Drive at Oak Hill Road	AWS	AM	Yes	Yes	Yes
		PM	Yes	Yes	Yes
19. First Street at Golden Gate Way (East)	SSS	AM	No	No	No
		PM	No	No	No
20. First Street at Golden Gate Way (West)	SSS	AM	No	No	No
		PM	No	No	No
21. First Street at Moraga Boulevard	AWS	AM	No	No	No
		PM	No	No	No
22. First Street at School Street	SSS	AM	No	No	No
		PM	No	No	No
23. Avalon Avenue at School Street	SSS	AM	No	No	No
		PM	No	No	No
32. St. Mary's Road at Avalon Avenue	SSS	AM	No	No	No
		PM	No	No	No
33. St. Mary's Road at Topper Lane	SSS	AM	No	No	No
		PM	No	No	No

Table 4.F-2**Baseline Intersection Peak Hour Traffic Signal Warrants (AM and PM Peak Hours)**

Does the unsignalized intersection meet the peak hour traffic signal warrant criteria (Yes or No)?					
	Control /1/	Peak Hour	Existing Baseline	Approved Baseline	Cumulative Baseline
34. Glenside Drive at St. Mary's Road (North)	AWS	AM	No	No	No
		PM	No	No	No
35. Glenside Drive at St. Mary's Road (South)	AWS	AM	Yes	Yes	Yes
		PM	Yes	Yes	Yes
39. Glenside Drive at Reliez Station Road	AWS	AM	Yes	Yes	Yes
		PM	No	No	No
40. Glenside Drive at Burton Drive	AWS	AM	Yes	Yes	Yes
		PM	No	No	Yes
44. Pleasant Hill Road at Olympic Boulevard	AWS	AM	Yes	Yes	Yes
		PM	Yes	Yes	Yes
Moraga Intersections					
36. Bollinger Canyon Road at St. Mary's Road	SSS	AM	No	No	No
		PM	No	No	No
37. Rheem Boulevard at St. Mary's Road	SSS	AM	No	No	Yes
		PM	No	No	No
38. St. Mary's Parkway at St. Mary's Road	SSS	AM	No	No	No
		PM	No	No	Yes
49. Moraga Road at Corliss Drive	SSS	AM	Yes	Yes	Yes
		PM	Yes	Yes	Yes

/1/ SSS = side-street stop, AWS = all-way stop

Source: Fehr & Peers, 2008

Orinda

Camino Pablo/Brookwood Road (intersection #5) operates at an unacceptable LOS F in the PM peak hour

Glorietta Boulevard/Moraga Way (intersection #9) operates at an unacceptable LOS F in the AM peak hour

Glorietta Boulevard/Rheem Boulevard (intersection #12) meets the peak hour signal warrant during the AM peak hour; however, intersection LOS is acceptable

Lafayette

Deer Hill Drive/Oak Hill Road (intersection #13) operates at an unacceptable LOS E in the AM and PM peak hour and the intersection meets the peak hour traffic signal warrant during both peak hours

Moraga Boulevard/Moraga Road (intersection #25) operates at an unacceptable LOS E in the AM peak hour

Brook Street/Moraga Road (intersection #26) operates at an unacceptable LOS E in the AM peak hour

Glenside Drive/St. Mary's Road (south) (intersection #35) operates at an acceptable LOS but the intersection meets the peak hour traffic signal warrant during both peak hours

Glenside Drive/Reliez Station Road (intersection #39) operates at an unacceptable LOS F in the AM peak hour and LOS E in the PM peak hour, and the intersection meets the peak hour signal warrant during the AM peak hour

Glenside Drive/Burton Drive (intersection #40) meets the peak hour signal warrant during the AM peak hour; however, the intersection LOS is acceptable

Pleasant Hill Road/Olympic Boulevard (intersection #44) operates at an unacceptable LOS F in the AM peak hour and LOS E in the PM peak hour, and the intersection meets the peak hour traffic signal warrant during both peak hours

Moraga

Moraga Road/Corliss Drive (intersection #49) operates at an acceptable LOS C overall but an unacceptable LOS F on the side street in the AM and PM peak hour, and the intersection meets the peak hour traffic signal warrant during both peak hours

Existing Routes of Regional Significance Operations

Traffic operations along routes of regional significance were evaluated using the Contra Costa Transportation Authority (CCTA) traffic model. Three corridors were evaluated

including SR 24 between I-680 and the Caldecott Tunnel, Camino Pablo between SR 24 and Bear Creek Road, and Pleasant Hill Road between SR 24 and Tayler Boulevard. Table 4.F-3 summarizes the AM and PM peak hour traffic volume characteristics along the three study corridors. The table also notes the calculated Delay Index for each study corridor. For this study, an acceptable Delay Index is considered to be 2.0, averaged over each study corridor. As noted in the table, all study corridors currently operate at acceptable Delay Indices except for westbound SR 24 in the AM peak hour.

Baseline Land Use Scenarios

The Project is evaluated against the existing environment and two potential future land use scenarios. The first represents a baseline condition after completion and occupancy of all approved projects in the Lamorinda area. The second represents a potential baseline condition in Year 2030 based on growth consistent with general plan development in Lafayette, Moraga, and Orinda. Table 4.F-4 provides a list of approved developments and Table 4.F-5 provides a list of cumulative development assumptions used in the transportation analysis.

Growth under the Approved and Cumulative scenarios was based on data provided by Planning Department staff at the Cities of Lafayette and Orinda and the Town of Moraga. The growth provided by Staff was checked for reasonableness against growth assumptions in *Projections 2007* published by the Association of Bay Area Government (ABAG). The overall growth for Lamorinda, as provided by local staff, represents about 90 percent of the household growth Projected by ABAG through 2030, and about 135 percent of the employment growth.

Overall, development already approved in Lafayette but not yet occupied includes about 20 residential units, and 95,000 square feet of commercial/civic uses. An additional 820 residential units, and 380,000 square feet of commercial use was assumed by Year 2030.

Overall, development already approved in Moraga but not yet occupied includes about 210 residential units. For Year 2030, an additional 590 residential units and 10,000 square feet of commercial uses were assumed.

Overall, development already approved in Orinda but not yet occupied includes about 270 residential units, and miscellaneous recreational uses. An additional 330 residential units and 420,000 square feet of commercial uses were assumed by Year 2030.

Table 4.F-3

Volumes and Delay Indices – Routes of Regional Significance

Volumes									Delay Indices			
SR 24 Between I-680 and the Caldecott Tunnel												
Peak Hour	2005				2030				2005		2030	
	Eastbound		Westbound		Eastbound		Westbound		Eastbound	Westbound	Eastbound	Westbound
	High	Low	High	Low	High	Low	High	Low				
AM	6,200	4,800	9,500	7,700	8,800	7,600	12,500	9,400	1.09	2.01	1.65	3.97
PM	8,500	7,700	7,900	6,800	11,800	9,900	9,800	8,700	1.85	1.36	4.50	2.20
Camino Pablo Between Bear Creek Road and SR 24												
Peak Hour	2005				2030				2005		2030	
	Northbound		Southbound		Northbound		Southbound		Northbound	Southbound	Northbound	Southbound
	High	Low	High	Low	High	Low	High	Low				
AM	750	650	1,050	750	950	900	1,400	950	1.03	1.10	1.26	1.70
PM	1,150	850	800	650	1,400	950	1,000	950	1.44	1.03	1.81	1.55
Pleasant Hill Road Between Taylor Boulevard and SR 24												
Peak Hour	2005				2030				2005		2030	
	Northbound		Southbound		Northbound		Southbound		Northbound	Southbound	Northbound	Southbound
	High	Low	High	Low	High	Low	High	Low				
AM	1,200	950	1,900	1,350	1,950	1,200	2,800	2,050	1.01	1.22	1.08	3.52
PM	2,050	1,300	2,050	1,450	2,800	2,050	2,350	1,600	1.38	1.40	3.41	2.29
Source: Fehr & Peers, 2008. calculated from the Contra Costa Transportation Authority Traffic Model												

Source: Fehr & Peers, 2008. calculated from the Contra Costa Transportation Authority Traffic Model

Table 4.F-4

Development Projects under the approved baseline Condition

Location	Project	Use	Size /1/
Lafayette	Hidden Oaks	Single-Family	21 DU
Lafayette	Lafayette Mercantile	Office	33 ksf
		Retail	22 ksf
Lafayette	Lafayette Library & Learning Center	Library	30.3 ksf
Lafayette	Veteran's Building	Civic Building	10.5 ksf
Moraga	Kimberly	Single-Family	2 DU
Moraga	Crossbrook	Single-Family	3 DU
Moraga	Corliss & Moraga Rd	Single-Family	1 DU
Moraga	500 Rheem Blvd	Single-Family	1 DU
Moraga	229 Rheem Blvd	Single-Family	1 DU
Moraga	Country Club	Single-Family	68 DU
Moraga	Los Encinos	Single-Family	10 DU
Moraga	Palos Colorados	Single-Family	123 DU
Orinda	Sandy Lane Subdivision	Single-Family	3 DU
		Single-Family	245 DU
Orinda	Gateway Valley	Softball Fields	5 fields
		Garden Center	4.5 acres
		Swim Club	6 acres
Orinda	Soule Road Subdivision	Single-Family	3 DU
Orinda	Lloyd Lane Subdivision	Single-Family	2 DU
Orinda	Park Way Subdivision	Single-Family	3 DU
Orinda	Orinda Oaks/Castlegate	Single-Family	12 DU

Notes:

/1/ DU = dwelling unit, ksf = thousand square feet

Source: Fehr & Peers, 2008

Table 4.F-5

Development Projects under the cumulative baseline Condition

Location	Project	Use	Size /1/
Lafayette	Town Center Phase II	Office	26 ksf
Lafayette	Lafayette Park Terrace	Condo	32 DU
Lafayette	Soldier Field Subdivision	Single-Family	8 DU
Lafayette	In-fill housing	Single-Family	250 DU
Lafayette	In-fill retail	Commercial	380 ksf
Lafayette	Downtown In-fill housing	Multi-Family	500 DU
Moraga	Bollinger Valley	Single-Family	126 DU (20% with 2 nd Units)
Moraga	Indian Valley	Single-Family	150 DU
Moraga	Rheem Park	Commercial	10 ksf
		Senior Housing	64 DU
Moraga	Northwest Moraga	Single-Family	19 DU
Moraga	Northeast Moraga	Single-Family	65 DU
Moraga	Central Moraga	Single-Family	1 DU
Moraga	Southeast Moraga	Single-Family	35 DU
Moraga	In-fill Housing	Single-Family	100 DU
Orinda	Pine Grove	Single-Family and Condo	65 SF DU; 8 condos
Orinda	Former Library Site	Senior Housing	44 DU
Orinda	Southwood Valley	Single-Family	17 DU
Orinda	Moraga Adobe Subdivision	Single-Family	15 DU
Orinda	BART Office Complex	Office	300 ksf
Orinda	Phair Building	Commercial	20 ksf
		Condo	20 DU
Orinda	North Orinda Residential	Commercial	50 ksf
		Condo	60 DU
Orinda	Crossroad Orinda Residential	Commercial	50 ksf
		Condo	30 DU
Orinda	In-fill Housing	Single-Family	70 DU

Notes:

/1/ DU = dwelling unit, ksf = thousand square feet

Source: Fehr & Peers, 2008

Existing plus Approved Intersection Operations

The HCM-based intersection analysis results for the AM and PM peak hours (obtained from SYNCHRO software) indicate that 12 study intersections will operate below the established local standards, and 7 unsignalized intersections will meet the peak hour traffic signal warrant. Refer to Table 4.F-1 for the LOS results at each study intersection and table 4.F-2 provides the peak hour signal warrant results. The Approved Baseline intersection traffic volumes are provided in Appendix D.

Orinda

Camino Pablo/Brookwood Road (intersection #5) operates at an unacceptable LOS F in the PM peak hour

Glorietta Boulevard/Moraga Way (intersection #9) operates at an unacceptable LOS F in the AM peak hour

Glorietta Boulevard/Rheem Boulevard (intersection #12) meets the peak hour signal warrant during the AM peak hour; however, intersection LOS is acceptable

Lafayette

Deer Hill Drive/Oak Hill Road (intersection #13) operates at an unacceptable LOS E in the AM and PM peak hour and the intersection meets the peak hour traffic signal warrant during both peak hours

Mt. Diablo Boulevard/Moraga Road (intersection #24), Moraga Boulevard/Moraga Road (intersection #25), Brook Street/Moraga Road (intersection #26), School Street/Moraga Road (intersection #27), and St. Mary's Road North/Moraga Road (intersection #28) will operate at an unacceptable LOS F in the AM and PM peak hours. Peak hour traffic demand through these intersections will exceed the system's available capacity which will alter driver behavior. For example, drivers may shift their trip making through the area to times outside the peak hours.

Glenside Drive/St. Mary's Road (south) (intersection #35) operates at an acceptable LOS but the intersection meets the peak hour traffic signal warrant during both peak hours

Glenside Drive/Reliez Station Road (intersection #39) operates at an unacceptable LOS F in the AM peak hour and PM peak hours, and the intersection meets the peak hour signal warrant during the AM peak hour

Glenside Drive/Burton Drive (intersection #40) operates at an unacceptable LOS E in the AM peak hour, and the intersection meets the peak hour signal warrant during the AM peak hour

Pleasant Hill Road/Olympic Boulevard (intersection #44) operates at an unacceptable LOS F in the AM and PM peak hours, and the intersection meets the peak hour traffic signal warrant during both peak hours

Moraga

Moraga Road/Corliss Drive (intersection #49) operates at an unacceptable LOS D in the AM peak hour, and the intersection meets the peak hour traffic signal warrant during both peak hours

Cumulative 2030 Traffic Operations

The HCM-based intersection analysis results for the AM and PM peak hours (obtained from SYNCHRO software) indicate that 15 study intersections will operate below the established local standards, and 10 unsignalized intersections will meet the peak hour traffic signal warrant. Refer to Table 4.F-1 for the LOS results at each study intersection, and Table 4.F-2 for locations meeting the peak hour signal warrant. The Cumulative Baseline intersection traffic volumes are provided in Appendix D.

Orinda

Camino Pablo/Brookwood Road (intersection #5) operates at an unacceptable LOS F in the AM and PM peak hours

Brookwood Road/Moraga Way (intersection #7) meets the peak hour signal warrant during the PM peak hour; however, intersection LOS is acceptable

Glorietta Boulevard/Moraga Way (intersection #9) operates at an unacceptable LOS F in the AM peak hour

Ivy Drive (south)/Moraga Way (intersection #10) operates at an unacceptable LOS E in the AM peak hour

Glorietta Boulevard/Rheem Boulevard (intersection #12) meets the peak hour signal warrant during the AM peak hour; however, intersection LOS is acceptable

Lafayette

Deer Hill Drive/Oak Hill Road (intersection #13) operates at an unacceptable LOS E in the AM peak hour and LOS F in the PM peak hour, and the intersection meets the peak hour traffic signal warrant during both peak hours

Mt. Diablo Boulevard/Moraga Road (intersection #24), Moraga Boulevard/Moraga Road (intersection #25), Brook Street/Moraga Road (intersection #26), School Street/Moraga Road (intersection #27), and St. Mary's Road North/Moraga Road (intersection #28) will operate at an unacceptable LOS F in the AM and PM peak hours. Peak hour traffic demand through these intersections will exceed the system's available capacity which will alter driver

behavior. For example, drivers may shift their trip making through the area to times outside the peak hours.

Glenside Drive/St. Mary's Road (south) (intersection #35) operates at an unacceptable LOS E in the AM and PM peak hours, and the intersection meets the peak hour traffic signal warrant during both peak hours

Glenside Drive/Reliez Station Road (intersection #39) operates at an unacceptable LOS F in the AM peak hour and PM peak hours, and the intersection meets the peak hour signal warrant during the AM peak hour

Glenside Drive/Burton Drive (intersection #40) operates at an unacceptable LOS E in the AM peak hour and LOS F in the PM peak hour, and the intersection meets the peak hour signal warrant during both peak hours

Pleasant Hill Road/Olympic Boulevard (intersection #44) operates at an unacceptable LOS F in the AM and PM peak hours, and the intersection meets the peak hour traffic signal warrant during both peak hours

Moraga

Moraga Way/Moraga Road (intersection #11) operates at an unacceptable LOS D in the PM peak hour

Rheem Boulevard / St. Mary's Road (intersection #37) meets the peak hour signal warrant during the AM peak hour; however, intersection LOS is acceptable

St. Mary's Parkway / St. Mary's Road (intersection #38) meets the peak hour signal warrant during the PM peak hour; however, intersection LOS is acceptable

Moraga Road/Corliss Drive (intersection #49) operates at an unacceptable LOS E in the AM peak hour for the overall intersection, and the intersection meets the peak hour traffic signal warrant during both peak hours

Routes of Regional Significance Operations

Refer to Table 4.F-3 for volume forecasts and calculated Delay Indexes obtained from the CCTA traffic model. As indicated, the Delay Index for the SR 24 corridor is expected to exceed the 2.0 threshold in the westbound direction during the AM peak hour and in both the east and west directions during the PM peak hour. The Pleasant Hill Road corridor Delay Indices are expected to exceed the 2.0 threshold for the southbound direction in the AM peak hour and in both the north and south directions during the PM peak hour. Delay Indices for the Camino Pablo corridor are expected to be less than the 2.0 threshold.

Project Site Characteristics

The Proposed Project and the Action Alternatives would add additional development to the specific plan area. Streets within and leading to the largest undeveloped portions of the site would be built to Town of Moraga and Fire District standards. The Project would also extend School Street and integrate the Lafayette-Moraga Regional Trail with the extension. The various alternatives studied in the transportation analysis include:

The Proposed Project as analyzed in this study consists of a mix of uses, including 720 residential units (20 single-family dwelling units, 400 compact or attached housing units, and 300 senior housing units), 150 assisted living and congregate care units, 85 hotel/bed and breakfast rooms, 90,000 square feet of retail, and 50,000 square feet of office space. This proposal also calls for a 30,000 square foot community center.

The Alternative 1 refers to the no build or “No Action” Alternative. This condition presumes that the specific plan area would remain as it is today with no changes to the transportation infrastructure and no changes to the land use designations; it also assumes that no new structures would be built anywhere within the planning area, and that no existing uses would be replaced with land uses having higher trip generation rates.

Alternative 2 represents the current land development scenario evaluated in the environmental document prepared for the Town’s 2002 General Plan. For this transportation analysis the assumed land uses included 339 single-family dwelling units, 16,000 square feet of retail, and 38,000 square feet of office space.

Alternative 3 as analyzed in this study includes 400 residential units (50 single-family dwelling units, 250 compact or attached housing units, and 100 senior housing units), 60 assisted living and congregate care units, 50 hotel/bed and breakfast rooms, 50,000 square feet of retail, and 50,000 square feet of office space. This proposal also calls for a 30,000 square foot community center.

Alternative 4 as analyzed in this study includes 560 residential units (65 single-family dwelling units, 265 compact or attached housing units, and 230 senior housing units), 90 assisted living and congregate care units, 50 hotel/bed and breakfast rooms, 90,000 square feet of retail, and 50,000 square feet of office space. This proposal also calls for a 30,000 square foot community center.

Vehicle Trip Generation Estimation

The number of vehicle trips added to the surrounding roadway system was estimated through a modeling process that incorporates trip generation rates from *Trip Generation* published by the Institute of Transportation Engineers and the CCTA model as well as data from the US Census, the Bay Area Travel Survey (for the Lamorinda area), local traffic counts, data collected at St. Mary’s College and Miramonte High School, and a market assessment for the Moraga Center Specific Plan. The model estimates the number of trips that remain internal to Moraga as well as the number of trips that leave Moraga.

Table 4.F-6 summarizes the daily vehicle trip generation inputs to the vehicle trip generation modeling process. Table 4.F-7 summarizes the trip generation model output for the AM and PM peak hours as well as the daily traffic. A complete description of the modeling process is described in the *Effects of Planned Development at Moraga Town Center on Community-Wide Travel Patterns* (Fehr & Peers, 2007) and its supporting technical appendix. The Community Center vehicle trip generation process was described in a technical memorandum *Trip Estimates and Parking Estimates – Community Center Moraga California* (Fehr & Peers, 2008). These documents are provided in Appendix D. Table 4.F-7 reflects the number of trips, without consideration of trip length or trip origination/destination. Therefore, an increase in the number of trips does not necessarily mean an increase in total vehicle miles driven.

Table 4.F-6

Moraga Center Daily Vehicle Trip Generation Rates

Land Type	Daily Vehicle Trip Rate
Single Family Residences (Trips per d.u.)	10.58
Multi-Family Residences (Trips per d.u.)	6.38
Workforce Housing (Trips per d.u.)	6.38
Student and/or Faculty Housing (Trips per d.u.)	5.96
Active Senior Residences (Trips per d.u.)	3.71
Retail (Trips per 1000 sq. ft.)	29.73
Office (Trips per 1000 sq. ft.)	16.03
Hotel / B&B Rooms (Trips per room)	8.17
Assisted Living (Trips per Unit)	2.74
Congregate Care (Trips Per Unit)	2.02
Source: Table 10, <i>Effects of Planned Development at Moraga Town Center on Community-Wide Travel Patterns</i> , June 2007, Fehr & Peers	

MORAGA CENTER SPECIFIC PLAN
DRAFT ENVIRONMENTAL IMPACT REPORT

Table 4.F-7

Moraga Center Specific Plan Vehicle Trip Generation

Trip Type	AM Peak Hour			PM Peak Hour			Daily		
	Total	In	Out	Total	In	Out	Total	In	Out
Proposed Project (720 Units)									
<i>Net New Project Trips</i>	323	130	193	423	221	202	5,060	2,520	2,540
Trips External to Moraga	148	58	90	162	86	76	1,834	910	924
Internal Town Center Trips	32	16	16	60	30	30	744	372	372
BART Trips	3	1	2	2	1	1	23	11	12
Alternative 1 (No Action)									
<i>Net New Project Trips</i>	0	0	0	0	0	0	0	0	0
Alternative 2 (339 Units)									
<i>Net New Project Trips</i>	222	36	186	258	169	89	3,100	1,568	1,532
Trips External to Moraga	129	11	118	120	90	30	1,389	696	693
Internal Town Center Trips	16	8	8	32	16	16	394	197	197
BART Trips	2	0	2	1	1	0	20	9	11
Alternative 3 (400 Units)									
<i>Net New Project Trips</i>	196	78	118	256	132	124	3,080	1,531	1,549
Trips External to Moraga	82	34	48	95	48	47	1,063	527	536
Internal Town Center Trips	18	9	9	32	16	16	408	204	204
BART Trips	2	1	1	2	1	1	14	7	7
Alternative 4 (560 Units)									
<i>Net New Project Trips</i>	276	121	155	365	183	182	4,371	2,148	2,223
Trips External to Moraga	122	55	67	136	67	69	1,541	747	794
Internal Town Center Trips	26	13	13	48	24	24	608	304	304
BART Trips	2	1	1	2	1	1	20	10	10
Community Center /1/									
<i>Net New Project Trips</i>	47	26	21	180	90	90	--	--	--
Trips External to Moraga	17	10	7	67	34	33	--	--	--

/1/ The Community Center vehicle trips are a component to the Proposed Project, Alternative 3, and Alternative 4. The daily traffic generation was not calculated for the community center.

Fehr & Peers 2008

Transit Trip Generation Estimation

Due to the mixed-use character of the Project, the proximity of local bus stops, and the existing bus service between the site and key destinations, the Project is likely to increase the number of trips by bus to and from the site. According to 2000 Census data, one percent of Moraga residents commute to work via bus. Bus trips to school, shopping, and other destinations are not reported in the Census. The current system, however, is designed to primarily serve commuters and students, and so transit ridership from the Project is expected to be similarly focused. As a result, peak hour bus ridership from the project is estimated to be less than 10 people.

Project Trip Distribution and Assignment

Trip distribution is defined as the directions of approach and departure that vehicles would use to arrive at and depart from the site. The trip distribution for the Project is based on select zone analyses using the CCTA model. This analysis determines current travel patterns from the area around the Project site, and takes into consideration the specific land uses included in the project. Based on the distribution patterns, project trips were assigned to the roadway network and study intersections via the most direct route.

For commercial uses

Of the AM and PM peak hour commercial traffic generated by the specific plan area, about 57% is expected to leave the Lamorinda area, while 9% is expected to have an origin or destination in Orinda and 5% in Lafayette. The remaining 29% is expected to stay within the Town of Moraga.

For residential uses

Of the AM and PM peak hour residential traffic generated by the specific plan area, about 34% of it is expected to stay within the Town of Moraga. Trips leaving the Lamorinda area represent about 53% of the traffic, while 6% is expected to have an origin or destination in Orinda and 5% in Lafayette. About 2% of the peak hour trips would go to/from the Orinda BART station.

For community center uses

Of the AM and PM peak hour community center traffic generated by the 30,000 square foot community center component of the Proposed Project and Alternatives 3 and 4, 50% of the activities were assumed to be locally-based use i.e., Moraga residents. The remaining activity was considered to be sub-regional based on the household distribution throughout the Lamorinda area with about 45% of the households in Lafayette, 30% in Orinda, and 25% in Moraga. Given these assumptions about 63% of the generated traffic will stay within Moraga, 22% will be toward Lafayette and 15% to Orinda.

4.F-2 REGULATORY SETTING

Contra Costa Transportation Authority Guidelines

The Contra Costa Transportation Authority (CCTA) serves as the Congestion Management Agency (CMA) for Contra Costa County. CCTA adopted the county's first Congestion Management Program (CMP) in October 1991. The most recent CMP is referred to as the 2007 CMP Update.

The *Draft Lamorinda Action Plan Update* (DKS Associates, 2008) establishes Multimodal Traffic Service Objectives (MTSOs) for routes of regional significance in Lamorinda. One MTSO used to measure freeway and arterial operations is peak hour Delay Index. Delay Index is defined as the ratio of the peak period travel time to off-peak period travel time on each roadway segment. For example, a Delay Index of 2.0 means that it takes twice as long to travel a particular segment during the peak commute hour than during non-commute hours when traffic moves at free-flow speeds.

While not used for determining CEQA-level intersection impacts, the technical analyst's completed intersection calculations using the CCTA adopted methodology for evaluating signalized intersections. The findings are presented in Appendix D and are provided for informational purposes.

Evaluation Criteria

Criteria have been established to determine whether the impacts caused by the Project or its alternatives rise to the level of significance.

The Project would have a significant impact on the environment if it would cause an increase in traffic which is substantial in relation to the traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio (V/C) on roads, or delay congestion at intersections), or change the condition of an existing street (e.g., street closures, changing direction of travel) in a manner that would substantially impact access or traffic load and capacity of the street system.

Each jurisdiction (Lafayette, Moraga, and Orinda) sets its own standards to further define an impact. The three communities do not have standards for unsignalized stop-controlled intersections and the CCTA does not require (as part of Measure C) the calculation of LOS at unsignalized stop-controlled intersections. However, there are intersections considered in this study that are stop-controlled. Thus, a LOS criterion is required to describe the intersection's operating characteristics. The standard set-forth in the *Town of Moraga Available Roadway Capacity Study* will be used for stop-controlled intersections. The standards for each jurisdiction are listed in Table 4.F-8 and Table 4.F-9 for signalized and unsignalized intersections, respectively.

Table 4.E-8

Signalized Intersection Level of Service Standards

Area	LOS Standard	V/C Ratio	HCM Control Delay Per Vehicle (Seconds) /4/
Lafayette /1/			
Downtown:	Poor D	0.85 to 0.90	45 to 55 seconds
Outside Downtown:	Good D	0.80 to 0.84	35 to 45 seconds
Orinda /2/			
Central Business District:	Good E	0.90 to 0.94	55 to 68 seconds
Suburban:	Good D	0.80 to 0.84	35 to 45 seconds
Moraga /3/	LOS C	0.75 to 0.79	28 to 35 seconds
Notes:			
1	City of Lafayette, General Plan, Growth Management Chapter, Policy C-1.2		
2	City of Orinda, General Plan, Table 5.1, page 83.		
3	Town of Moraga General Plan (2002).		
4	HCM control delay per vehicle obtained from 2000 Highway Capacity Manual.		

Table 4.E-9

Unsignalized Intersection Level of Service Standards

Intersection Type	LOS Standard /1/	HCM Control Delay Per Vehicle (Seconds) /2/
<u>All-Way Stop Control</u>		
Overall Intersection	Poor D	30 to 35 seconds
<u>One- and Two-Way Stop Control</u>		
Overall Intersection	Poor C	20 to 25 seconds
Side Street Traffic	Poor E	43 to 50 seconds
Notes:		
1.	Town of Moraga Available Roadway Capacity Study, Page 11. (Robert L. Harrison Transportation Planning, January 1999)	
2.	HCM control delay per vehicle obtained from 2000 Highway Capacity Manual.	

General Project Impacts

- Would the Project results in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks;
- Would substantially increase traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with Caltrans design standards or incompatible uses (e.g., farm equipment);
- Would construction traffic from the Project have a significant, though temporary, impact on the environment or if Project construction would substantially affect traffic flow and circulation, parking, and pedestrian safety;
- Would fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle routes); or
- Would generate added transit ridership that would increase the peak hour average ridership at a BART station by three (3) percent where average waiting time at fare gates would exceed one minute.
- Would generate parking demands that are inconsistent with adopted municipal code requirements or otherwise cause parking deficiencies that impact uses outside the specific plan area.

Table 4.F-10 presents criteria for analysis of transportation impacts.

Table 4.F-10

Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.F-1. Will the Project create adverse vehicular impacts on designated Routes of Regional Significance?	For each direction of travel: Delay Index (congested travel time divided by uncongested travel time)	Exceed a Delay Index of 2.0 on the SR 4 corridor between I-680 and the Caldecott Tunnel; the Pleasant Hill Road corridor between SR 24 and Taylor Boulevard; and the Camino Pablo corridor between SR 24 and Bear Creek Road.	Draft Lamorinda Action Plan Update (2008)
4.F-2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga?	Change in level of service and critical movement delay	a. Cause the LOS to drop below LOS C (defined as 35 seconds or more average control delay per vehicle). b. Add additional trips to an intersection operating below the acceptable grade.	CEQA Checklist XV(a); Contra Costa Transportation Authority Guidelines; Moraga General Plan Guiding Principle 5 (p. 2-2); and interpretation of CEQA case law
4.F-3. Will the Project create adverse vehicular impacts for unsignalized intersections in the Town of Moraga?	Change in level of service and critical movement delay.	Side Street Stops a. Cause the overall LOS to drop below a "poor" C (25 seconds delay) and b. Cause the side street LOS to drop below a "poor" E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard All-Way Stops a. Cause the overall LOS to drop below a "poor" D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	CEQA Checklist XV(a); Moraga General Plan Guiding Principle 5 (p. 2-2); and interpretation of CEQA case law
4.F-4. Will the Project create vehicular impacts for signalized intersections in Lafayette?	Change in the level of service and critical movement delay.	a. Lafayette Downtown– Cause the LOS to drop below a "poor" D (defined as 55 seconds or more average delay per vehicle)	CEQA Checklist XV (a,b); Contra Costa Transportation Authority

Table 4.F-10

Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
		b. Outside Lafayette Downtown -- Cause the LOS to drop below a "good" D (defined as 45 seconds or more average delay per vehicle) d. Add additional trips to an intersection operating below the acceptable grade	Guidelines; City of Lafayette General Plan (2002); and interpretation of CEQA case law
4.F-5. Will the Project create vehicular impacts for unsignalized intersections in Lafayette?	Change in level of service and critical movement delay.	Side Street Stops a. Cause the overall LOS to drop below a "poor" C (25 seconds delay) and b. Cause the side street LOS to drop below a "poor" E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard All-Way Stops a. Cause the overall LOS to drop below a "poor" D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	CEQA Checklist Item XV (a); City of Lafayette General Plan (2002); and interpretation of CEQA case law
4.F-6. Will the Project create vehicular impacts for signalized intersections in Orinda?	Change in level of service and critical movement delay.	a. Central Business District -- Cause the LOS to drop below a "good" E (defined as 68 seconds or more average delay per vehicle) b. Suburban Streets -- Cause the LOS to drop below a "good" D (defined as 45 seconds or more average delay per vehicle) c. Add additional trips to an intersection operating below the acceptable grade	CEQA Checklist XV (a,b); Contra Costa County Transportation Authority Guidelines; City of Orinda General Plan (1994); and interpretation of CEQA case law

Table 4.F-10

Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
4.F-7. Will the Project create vehicular impacts for unsignalized intersections in Orinda?	Change in level of service and critical movement delay.	Side Street Stops a. Cause the overall LOS to drop below a "poor" C (25 seconds delay) and b. Cause the side street LOS to drop below a "poor" E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard All-Way Stops a. Cause the overall LOS to drop below a "poor" D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	CEQA Checklist Item XV (a); City of Orinda General Plan (1994); and interpretation of CEQA case law
4.F-8. Will the Project adversely affect public transit service levels or accessibility to public transit service?	Amount of increased demand for transit service; Reduction of transit availability or interference with existing transit users; Distance from existing or planned transit services, with the potential for generating a demand for such services	Increase demand beyond accepted service standards; Interfere with existing users transits on a permanent or temporary basis	CEQA Checklist XV (g); County Transportation Authority Guidelines; Moraga General Plan Guiding Principle 6, Policy C2.1
4.F-9. Will the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment on roads)?	Number of hazardous road conditions created, access and circulation design, sight distance, turn lanes, traffic controls	Any increase in hazardous road conditions or internal access or circulation below Town and MOFD standards	CEQA Checklist XV (d); Town and MOFD standards
4.F-10. Will the Project cause adverse impacts on the use of bicycle and/or pedestrian travel ways?	Impacts on the use of existing bicycle and/or pedestrian travel ways; Impacts on bicyclist and/or pedestrian access to activity	Cause closure or substantial interference; Substantially reduce bicyclist and/or pedestrian access; Substantially reduce safety for bicyclists and/or pedestrians	CEQA Checklist XV (g); Contra Costa Transportation Authority Guidelines; Moraga General Plan Guiding Principle 6, Policy C1.1

Table 4.F-10

Evaluation Criteria with Points of Significance

Evaluation Criteria	As Measured by	Point of Significance	Justification
	centers; Impacts on the safety for bicyclists and/or pedestrians		
4.F-11. Will the Project create adverse impacts to existing parking or access to existing parking?	Demand for off-street parking versus the proposed off-street parking supply; Impacts on the availability of on-street parking, either through removal or through increased demand ("spillover") for that existing on-street parking	If the demand is greater than the proposed supply; Cause a substantial reduction in availability of parking	Contra Costa Transportation Authority Guidelines CEQA Checklist XV(f)

4.F-3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES (EXISTING PLUS PROJECT)

Table 4.F-11 presents the project's traffic volume forecast at each study intersection. Also presented in the Table are the traffic contributions from other traffic components including: existing traffic, traffic from approved developments, and traffic from other cumulative development (consistent with the various general plan documents) that could occur by Year 2030.

Table 4.F-12 presents the LOS results at each study intersection under existing conditions without and with the Action Alternatives. Refer to Section 4.F-4 for a discussion of intersection operations under the Approved and Cumulative Scenarios. The intersection turning movement forecasts with project traffic are provided in Appendix D.

Table 4.F-13 presents potential transportation, circulation, and parking impacts, outlines points of significance, level of impact, and type of impact and also ranks the level of significance for all Alternatives. The potential for transportation, circulation, and parking conflicts is determined by the potential of the project to exceed current service levels, impede access, and increase vehicular incidents.

Table 4.F-11

Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
Orinda Intersections										
1. Orinda Way/Santa Maria Way	AM	1090	11	74	2	0	1	0	2	0
	PM	1687	33	113	0	0	1	0	0	0
2. Camino Pablo/Santa Maria Way	AM	3479	43	384	7	0	5	2	6	5
	PM	4399	168	620	5	0	5	2	4	18
3. Camino Pablo/BART Driveways	AM	3864	70	719	40	0	48	22	31	5
	PM	4212	151	879	36	0	18	22	30	18
4. Camino Pablo/SR 24 EB Ramps	AM	3528	68	376	40	0	47	22	31	5
	PM	3805	145	617	36	0	18	22	32	18
5. Camino Pablo/ Brookwood Road	AM	3256	61	310	57	0	49	31	48	5
	PM	3938	109	434	65	0	49	39	55	18
6. Camino Pablo/ Moraga Way	AM	2719	64	169	57	0	49	31	48	5
	PM	2804	109	225	65	0	49	39	55	18
7. Brookwood Road/Moraga Way	AM	969	5	84	0	0	0	0	0	0
	PM	1024	6	203	0	0	0	0	0	0
8. Bryant Way/Moraga Way	AM	701	4	39	0	0	0	0	0	0
	PM	681	3	76	0	0	0	0	0	0
9. Glorietta Boulevard/ Moraga Way	AM	2528	60	175	67	0	55	37	55	5
	PM	2486	103	227	75	0	55	45	63	18
10. Ivy Drive/ Moraga Way	AM	1944	29	106	88	0	70	50	75	5
	PM	1798	40	130	86	0	67	45	78	18

Table 4.F-11

Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
12. Glorietta Boulevard/ Rheem Boulevard	AM	965	44	101	-1	0	3	-2	-2	2
	PM	934	76	138	-2	0	5	-1	-3	10
Lafayette Intersections										
13. Deer Hill Drive/Oak Hill Road	AM	2468	26	207	6	0	1	4	5	2
	PM	2377	85	293	6	0	6	3	5	10
14. Mt. Diablo Boulevard/ Oak Hill Road	AM	1993	83	386	9	0	3	5	7	5
	PM	2425	219	678	9	0	9	5	7	20
15. Deer Hill Drive/SR 24 Westbound Ramps	AM	3197	54	259	12	0	2	8	10	0
	PM	3305	168	323	12	0	12	6	10	0
16. Deer Hill Drive/1st Street	AM	2513	37	111	6	0	1	4	5	0
	PM	2717	106	138	6	0	6	3	5	0
17. SR 24 Eastbound On-Ramp/ 1st Street	AM	2358	76	195	20	0	20	11	16	0
	PM	2733	193	259	17	0	11	10	15	0
18. Mt. Diablo Boulevard/ 1st Street	AM	2698	117	333	21	0	21	11	17	2
	PM	2774	321	510	17	0	12	10	15	10
19. First Street/ Golden Gate Way (East)	AM	312	2	5	0	0	0	0	0	0
	PM	269	9	6	0	0	0	0	0	0
20. First Street/ Golden Gate Way (West)	AM	280	0	6	0	0	0	0	0	0
	PM	246	2	5	0	0	0	0	0	0
21. First Street/ Moraga Boulevard	AM	412	0	9	0	0	0	0	0	0
	PM	351	2	7	0	0	0	0	0	0
22. First Street/ School Street	AM	572	0	12	0	0	0	0	0	0
	PM	405	2	8	0	0	0	0	0	0

Table 4.F-11

Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
23. Avalon Avenue/ School Street	AM	496	0	10	0	0	0	0	0	0
	PM	353	0	6	0	0	0	0	0	0
24. Mt. Diablo Boulevard/ Moraga Road	AM	3083	124	406	29	0	25	16	24	7
	PM	3352	282	669	25	0	21	15	22	30
25. Moraga Road/ Moraga Boulevard	AM	2320	91	250	29	0	25	16	24	7
	PM	2041	180	390	26	0	21	16	21	30
26. Moraga Road/ Brook Street	AM	2347	91	248	29	0	25	16	24	7
	PM	2153	180	393	26	0	21	16	21	30
27. Moraga Road/ School Street	AM	2323	91	248	29	0	25	16	24	7
	PM	2112	182	392	26	0	21	16	21	30
28. Moraga Road/ St. Mary's Road (North)	AM	2125	94	248	26	0	24	13	21	7
	PM	1966	186	392	22	0	20	14	17	30
32. St. Mary's Road / Avalon Avenue	AM	747	6	46	-3	0	-1	-3	-3	2
	PM	793	8	70	-4	0	-1	-2	-4	10
33. St. Mary's Road/ Topper Lane	AM	851	6	48	-3	0	-1	-3	-3	2
	PM	832	8	72	-4	0	-1	-2	-4	10
34. Glenside Drive/St. Mary's Road (North)	AM	741	7	34	-4	0	-1	-3	-3	5
	PM	645	9	41	-5	0	-1	-2	-4	20
35. Glenside Drive/ St. Mary's Road (South)	AM	1231	17	113	41	0	35	24	35	5
	PM	1265	24	152	49	0	35	30	43	20
39. Glenside Drive/ Reliez Station Road	AM	1497	24	113	39	0	34	21	32	0
	PM	1289	29	142	46	0	34	28	39	0
40. Glenside Drive/ Burton Drive	AM	1187	17	110	42	0	35	24	35	0
	PM	1079	22	136	50	0	35	30	43	0

Table 4.F-11

Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt. 3 (400 units)	Alt. 4 (560 Units)	Community Center
41. Pleasant Hill Rd/ Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	AM	3200	60	381	31	0	27	17	25	0
	PM	3168	103	600	29	0	23	17	25	0
42. Pleasant Hill Rd/ Old Tunnel Rd- SR 24 Eastbound Off-Ramp	AM	2177	54	204	33	0	28	19	27	0
	PM	2405	90	320	31	0	23	18	26	0
43. Pleasant Hill Road/ Condit Drive	AM	1860	46	159	33	0	28	19	27	0
	PM	1796	72	218	31	0	23	18	26	0
44. Pleasant Hill Road/ Olympic Boulevard	AM	2311	56	177	40	0	34	21	32	0
	PM	2582	82	248	46	0	33	27	38	0
45. Happy Valley Road/ Mt. Diablo Boulevard	AM	1743	11	74	0	0	1	0	0	3
	PM	2188	33	107	0	0	0	0	0	10
Moraga Intersections										
11. Moraga Way/ Moraga Road	AM	1972	82	209	87	0	50	56	78	14
	PM	2195	109	276	129	0	72	81	114	56
29. Campolindo Drive/Moraga Road	AM	1851	134	147	30	0	28	17	25	5
	PM	1674	194	210	27	0	23	16	22	20
30. Rheem Boulevard/ Moraga Road	AM	1782	71	171	28	0	30	14	23	7
	PM	1871	118	263	27	0	27	16	20	30
31. Moraga Road/St. Mary's Road (South)	AM	1697	55	175	207	0	142	129	181	30
	PM	1762	73	227	267	0	161	167	234	114
36. Bollinger Canyon Road/St. Mary's Road	AM	990	17	171	42	0	35	23	35	5
	PM	933	23	228	49	0	34	29	41	20
37. Rheem Boulevard/St. Mary's Road	AM	1100	20	137	42	0	35	23	35	5
	PM	1038	31	180	49	0	34	29	41	20

Table 4.F-11

Traffic Volume Contributions by Study Intersection (AM and PM Peak Hours)

	Peak Hour	Existing	Approved	Cumulative	Proposed Project (720 Units)	Alt. 1 (No Action)	Alt. 2 (339 units)	Alt 3 (400 units)	Alt. 4 (560 Units)	Community Center
38. St. Mary's Parkway/St. Mary's Road	AM	967	24	107	51	0	40	28	42	14
	PM	1105	34	142	60	0	40	36	51	58
46. Center Street/ Rheem Boulevard	AM	764	31	47	-1	0	1	-3	-3	2
	PM	986	41	67	-1	0	3	-1	-2	10
47. Moraga Road/Ascot Drive	AM	1555	58	128	37	0	34	19	30	7
	PM	1651	91	183	39	0	32	22	30	28
48. Moraga Road/Donald Drive	AM	1497	58	126	37	0	34	19	30	7
	PM	1528	91	182	39	0	32	22	30	28
49. Moraga Road/Corliss Drive	AM	1340	43	106	142	0	92	89	124	18
	PM	1424	57	138	189	0	112	119	166	66
50. Moraga Way/ St. Andrews Drive	AM	1232	29	93	93	0	70	55	80	5
	PM	1401	40	123	104	0	67	63	90	18
51. Moraga Way/ School Street	AM	1069	29	88	93	0	70	55	80	5
	PM	1231	40	119	104	0	67	63	90	18

Notes:

Bold font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

Source: Fehr & Peers, 2008

Table 4.F-12

Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
Orinda Intersections											
1. Orinda Way/Santa Maria Way	AM	12	B	12	B	12	B	12	B	12	B
	PM	15	B	15	B	15	B	15	B	15	B
2. Camino Pablo/Santa Maria Way	AM	7	A	7	A	7	A	7	A	7	A
	PM	19	B	19	B	19	B	19	B	19	B
3. Camino Pablo/BART Driveways	AM	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)
	PM	2 (27)	A (D)	2 (28)	A (D)	2 (27)	A (D)	2 (27)	A (D)	2 (27)	A (D)
4. Camino Pablo/SR 24 EB Ramps	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM										
5. Camino Pablo/ Brookwood Road	AM	58	E	63	E	63	E	61	E	62	E
	PM	98	F	104	F	103	F	102	F	103	F
6. Camino Pablo/ Moraga Way	AM	13	B	13	B	13	B	13	B	13	B
	PM	17	B	18	B	18	B	17	B	17	B
7. Brookwood Road/Moraga Way	AM	18	C	18	C	18	C	18	C	18	C
	PM	15	C	15	C	15	C	15	C	15	C
8. Bryant Way/Moraga Way	AM	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)
	PM	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)	6(17)	A (C)	6 (17)	A (C)
9. Glorietta Boulevard/ Moraga Way	AM	80	F	87	F	89	F	83	F	85	F
	PM	25	C	28	C	27	C	27	C	27	C
10. Ivy Drive/ Moraga Way	AM	43	D	48	D	48	D	45	D	47	D
	PM	24	C	26	C	25	C	25	C	25	C
12. Glorietta Boulevard/ Rheem Boulevard	AM	11 (20)	B (C)	11 (20)	B (C)	11 (20)	B (C)	11 (20)	A (C)	11 (20)	B (C)
	PM	5 (14)	A (B)	5 (14)	A (B)	5 (14)	A (B)	5 (14)	A (B)	5 (14)	A (B)

Table 4.F-12

Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
Lafayette Intersections											
13. Deer Hill Drive/Oak Hill Road	AM	38	E	38	E	38	E	38	E	38	E
	PM	41	E	41	E	41	E	41	E	41	E
14. Mt. Diablo Boulevard/ Oak Hill Road	AM	27	C	27	C	27	C	28	C	27	C
	PM	31	C	31	C	31	C	31	C	31	C
15. Deer Hill Drive/SR 24 Westbound Ramps	AM	32	C	33	C	32	C	32	C	32	C
	PM	30	C	30	C	30	C	30	C	30	C
16. Deer Hill Drive/1st Street	AM	12	B	12	B	12	B	12	B	12	B
	PM	15	B	15	B	15	B	15	B	15	B
17. SR 24 Eastbound On-Ramp/1st Street	AM										
	PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18. Mt. Diablo Boulevard/ 1st Street	AM	30	C	30	C	30	C	30	C	30	C
	PM	28	C	28	C	28	C	28	C	28	C
19. First Street/ Golden Gate Way (East)	AM	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)
	PM	6 (10)	A (B)	6 (10)	A (B)	6 (10)	A (B)	6 (10)	A (B)	6 (10)	A (B)
20. First Street/ Golden Gate Way (West)	AM	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)
	PM	4 (6)	A (A)	4 (6)	A (A)	4 (6)	A (A)	4 (6)	A (A)	4 (6)	A (A)
21. First Street/ Moraga Boulevard	AM	9	A	9	A	9	A	9	A	9	A
	PM	9	A	9	A	9	A	9	A	9	A
22. First Street/ School Street	AM	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)
	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)
23. Avalon Avenue/ School Street	AM	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)
	PM	1 (10)	A (B)	1 (10)	A (B)	1 (10)	A (B)	1 (10)	A (B)	1 (10)	A (B)

Table 4.F-12

Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
24. Mt. Diablo Boulevard/ Moraga Road/3/	AM	51	D	55	D	51	D	54	D	54	D
	PM	53	D	55	D	53	D	55	D	55	D
25. Moraga Road/ Moraga Boulevard/3/	AM	--	E	--	E	--	E	--	E	--	E
	PM	20	B	32	C	27	C	29	C	31	C
26. Moraga Road/ Brook Street/3/	AM	--	E	--	E	--	E	--	E	--	E
	PM	21	C	28	C	27	C	28	C	28	C
27. Moraga Road/ School Street/3/	AM	42	D	44	D	42	D	44	D	44	D
	PM	17	B	28	C	28	C	27	C	28	C
28. Moraga Road/ St. Mary's Road (North) /3/	AM	34	C	36	D	35	C	35	C	36	D
	PM	31	C	35	C	32	C	34	C	35	C
32. St. Mary's Road / Avalon Avenue	AM	2 (18)	A (C)	2 (18)	A (C)	2 (18)	A (C)	2 (18)	A (C)	2 (18)	A (C)
	PM	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)
33. St. Mary's Road/ Topper Lane	AM	3 (25)	A (D)	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (D)
	PM	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)
34. Glenside Drive/St. Mary's Road (North)	AM	12	B	12	B	12	B	12	B	12	B
	PM	10	A	10	A	10	A	10	A	10	A
35. Glenside Drive/ St. Mary's Road (South)	AM	21	C	24	C	23	C	23	C	24	C
	PM	21	C	25	C	24	C	23	C	24	C
39. Glenside Drive/ Reliez Station Road	AM	91	F	103	F	102	F	97	F	100	F
	PM	49	E	58	F	57	F	55	F	57	F
40. Glenside Drive/ Burton Drive	AM	34	D	43	E	42	E	39	E	41	E
	PM	25	D	32	D	29	D	29	D	31	D
41. Pleasant Hill Rd/ Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	AM	14	B	14	B	14	B	14	B	14	B
	PM	18	B	18	B	18	B	18	B	18	B

Table 4.F-12

Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
42. Pleasant Hill Rd/ Old Tunnel Rd- SR 24 Eastbound Off-Ramp	AM	10	A	10	A	10	A	10	A	10	A
	PM	11	B	11	B	11	B	11	B	11	B
43. Pleasant Hill Road/ Condit Drive	AM	9	A	9	A	9	A	9	A	9	A
	PM	7	A	7	A	7	A	7	A	7	A
44. Pleasant Hill Road/ Olympic Boulevard	AM	55	F	60	F	62	F	58	F	59	F
	PM	48	E	52	F	49	E	50	F	51	F
45. Happy Valley Road/ Mt. Diablo Boulevard	AM	25	C	25	C	25	C	25	C	25	C
	PM	35	C	35	C	35	C	35	C	35	C
Moraga Intersections											
11. Moraga Way/ Moraga Road	AM	25	C	26	C	25	C	26	C	26	C
	PM	28	C	31	C	29	C	30	C	31	C
29. Campolindo Drive/Moraga Road	AM	18	B	18	B	18	B	18	B	18	B
	PM	14	B	14	B	14	B	14	B	14	B
30. Rheem Boulevard/ Moraga Road	AM	21	C	21	C	21	C	21	C	21	C
	PM	20	C	20	C	20	C	20	C	20	C
31. Moraga Road/St. Mary's Road (South)	AM	12	B	14	B	13	B	13	B	14	B
	PM	12	B	14	B	13	B	14	B	14	B
36. Bollinger Canyon Road/St. Mary's Road	AM	1 (20)	A (C)	1 (21)	A (C)	1 (22)	A (C)	1 (21)	A (C)	1 (21)	A (C)
	PM	1 (16)	A (C)	1 (17)	A (C)	1 (17)	A (C)	1 (17)	A (C)	1 (17)	A (C)
37. Rheem Boulevard/St. Mary's Road	AM	5 (25)	A (D)	6 (30)	A (D)	6 (27)	A (D)	6 (27)	A (D)	6 (29)	A (D)
	PM	5 (26)	A (D)	6 (30)	A (D)	5 (28)	A (D)	5 (28)	A (D)	5 (29)	A (D)
38. St. Mary's Parkway/St. Mary's Road	AM	4 (15)	A (C)	4 (18)	A (C)	4 (16)	A (C)	4 (17)	A (C)	4 (17)	A (C)
	PM	6 (15)	A (C)	6 (17)	A (C)	6 (15)	A (C)	6 (16)	A (C)	6 (16)	A (C)

Table 4.F-12

Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Existing – No Project (Alternative 1)		Existing With Proposed Project		Existing With Alternative 2 (339 units)		Existing With Alternative 3 (400 units)		Existing With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
46. Center Street/ Rheem Boulevard	AM	8	A	8	A	8	A	8	A	8	A
	PM	10	B	10	B	10	B	10	B	10	B
47. Moraga Road/Ascot Drive	AM	10	A	10	A	10	A	10	A	10	A
	PM	8	A	8	A	8	A	8	A	8	A
48. Moraga Road/Donald Drive	AM	11	B	12	B	11	B	11	B	12	B
	PM	7	A	7	A	7	A	7	A	7	A
49. Moraga Road/Corliss Drive	AM	23 (200)	C (F)	38 (377)	E (F)	31 (293)	D (F)	33 (312)	D (F)	36 (354)	E (F)
	PM	6 (59)	A (F)	12 (149)	A (F)	8 (87)	A (F)	10 (115)	A (F)	11 (131)	B (F)
50. Moraga Way/ St. Andrews Drive	AM	11	B	12	B	12	B	11	B	11	B
	PM	12	B	12	B	12	B	12	B	12	B
51. Moraga Way/ School Street	AM	10	A	10	A	10	A	10	A	10	A
	PM	11	B	11	B	11	B	11	B	11	B

Notes:

Bold font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

/3/ These intersections were evaluated using the SimTraffic component of the SYNCHRO software to account for the field observed vehicle queue length fluctuations, school children crossings, left-turn conflicts, and unique signal timing parameters. Delay for LOS D or better based on the average of 5 random runs. Delay for LOS E or F is not reported because of variability between runs.

Source: Fehr & Peers, 2008

Table 4.F-13

Transportation, Circulation, and Parking Impacts –All Alternatives

Impact	Point of Significance	Type of Impact /1/	Level of Significance /2/
4.F-1. Will the Project create adverse vehicular impacts on Routes of Regional Significance?	Exceed a Delay Index of 2.0 on the SR 4 corridor between I-680 and the Caldecott Tunnel; the Pleasant Hill Road corridor between SR 24 and Taler Boulevard; and the Camino Pablo corridor between SR 24 and Bear Creek Road.	P	Proposed Project ● Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ● Alternative 3 (400 Unit Alternative) ● Alternative 4 (560 Unit Alternative) ●
4.F-2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga?	a. Cause the LOS to drop below LOS C (defined as 35 seconds or more average control delay per vehicle). b. Add additional trips to an intersection operating below the acceptable grade.	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.F-3. Will the Project create adverse vehicular impacts for unsignalized intersections in the Town of Moraga?	Side Street Stops a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and b. Cause the side street LOS to drop below a “poor” E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard All-Way Stops a. Cause the overall LOS to drop below a “poor” D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	P	Proposed Project ⊙ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ⊙ Alternative 3 (400 Unit Alternative) ⊙ Alternative 4 (560 Unit Alternative) ⊙

Table 4.F-13

Transportation, Circulation, and Parking Impacts –All Alternatives

Impact	Point of Significance	Type of Impact /1/	Level of Significance /2/
4.F-4. Will the Project create vehicular impacts for signalized intersections in Lafayette?	a. Lafayette Downtown -- Cause the LOS to drop below a “poor” D (defined as 55 seconds of delay) b. Outside Lafayette Downtown -- Cause the LOS to drop below a “good” D (defined as 45 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard	P	Proposed Project ● Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ● Alternative 3 (400 Unit Alternative) ● Alternative 4 (560 Unit Alternative) ●
4.F-5. Will the Project create vehicular impacts for unsignalized intersections in Lafayette?	Side Street Stops a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and b. Cause the side street LOS to drop below a “poor” E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard All-Way Stops a. Cause the overall LOS to drop below a “poor” D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	P	Proposed Project ⊙ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ⊙ Alternative 3 (400 Unit Alternative) ⊙ Alternative 4 (560 Unit Alternative) ⊙
4.F-6. Will the Project create vehicular impacts for signalized intersections in Orinda?	a. Central Business District – Cause the LOS to drop below a “good” E (defined as 68 seconds delay) b. Suburban Streets -- Cause the LOS to drop below a “good” D (defined as 45 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard	P	Proposed Project ● Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ● Alternative 3 (400 Unit Alternative) ● Alternative 4 (560 Unit Alternative) ●

Table 4.F-13

Transportation, Circulation, and Parking Impacts –All Alternatives

Impact	Point of Significance	Type of Impact /1/	Level of Significance /2/
4.F-7. Will the Project create vehicular impacts for unsignalized intersections in Orinda?	Side Street Stops a. Cause the overall LOS to drop below a “poor” C (25 seconds delay) and b. Cause the side street LOS to drop below a “poor” E (50 seconds delay) c. Add additional trips to an intersection operating below the acceptable standard All-Way Stops a. Cause the overall LOS to drop below a “poor” D (35 seconds delay) b. Add additional trips to an intersection operating below the acceptable standard	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.F-8. Will the Project adversely affect public transit service levels or accessibility to public transit service?	Increase demand beyond accepted service standards; Interfere with existing users transits on a permanent or temporary basis; Be located more than ¾ miles away from transit services	P	Proposed Project ○ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ○ Alternative 3 (400 Unit Alternative) ○ Alternative 4 (560 Unit Alternative) ○
4.F-9. Will the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment on roads)?	Any increase in hazardous road conditions. Internal access or circulation below Town and MOFD standards	P	Proposed Project ⊙ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ⊙ Alternative 3 (400 Unit Alternative) ⊙ Alternative 4 (560 Unit Alternative) ⊙

Table 4.F-13

Transportation, Circulation, and Parking Impacts –All Alternatives

Impact	Point of Significance	Type of Impact /1/	Level of Significance /2/
4.F-10. Will the Project cause adverse impacts on the use of bicycle and/or pedestrian travel ways?	Cause closure or substantial interference; Substantially reduce bicyclist and/or pedestrian access; Substantially reduce safety for bicyclists and/or pedestrians	P	Proposed Project ☉ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ☉ Alternative 3 (400 Unit Alternative) ☉ Alternative 4 (560 Unit Alternative) ☉
4.F-11. Will the Project create adverse impacts to existing parking or access to existing parking?	If the demand is greater than the proposed supply; Cause a substantial reduction in availability of parking	P	Proposed Project ☉ Alternative 1 (No Project - Existing Conditions) == Alternative 2 (323 Unit Alternative - GP Development Level) ☉ Alternative 3 (400 Unit Alternative) ☉ Alternative 4 (560 Unit Alternative) ☉

Notes: /1/ Type of Impact:

C Construction

P Permanent

/2/ Level of Significance:

● Significant impact before and after mitigation

☉ Significant impact before mitigation; less than significant impact after mitigation

○ Less than significant impact; no mitigation proposed

== No impact

Impact: **4.F-1. Will the Project create adverse vehicular impacts on Routes of Regional Significance?**

Analysis: *No Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

State Route 24: The Project and all the Action Alternatives add traffic to SR 24 during the AM and PM peak hours as follows:

	Eastbound	Westbound
Proposed Project		
AM Peak	28 vehicles (max)	30 vehicles (max)
PM Peak	30 vehicles (max)	26 vehicles (max)
Alternative 2 (339 Unit Alternative)		
AM Peak	38 vehicles (max)	38 vehicles (max)
PM Peak	30 vehicles (max)	30 vehicles (max)
Alternative 3 (400 Unit Alternative)		
AM Peak	15 vehicles (max)	16 vehicles (max)
PM Peak	17 vehicles (max)	16 vehicles (max)
Alternative 4 (560 Unit Alternative)		
AM Peak	22 vehicles (max)	22 vehicles (max)
PM Peak	23 vehicles (max)	24 vehicles (max)

The added trips to SR 24 would increase the Delay Index by up to 0.01. The Delay Index on SR 24 would remain below 2.0 in the AM and PM peak hours under the Proposed Project and Action Alternatives, with the exception of the westbound direction in the AM peak hour. Therefore, this is considered a Significant Impact.

Pleasant Hill Road: The Proposed Project and Action Alternatives add traffic to Pleasant Hill Road during the AM and PM peak hours as follows:

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	Eastbound	Westbound
Proposed Project		
AM Peak	3 vehicles (max)	4 vehicles (max)
PM Peak	3 vehicles (max)	3 vehicles (max)
Alternative 2 (339 Unit Alternative)		
AM Peak	2 vehicles (max)	5 vehicles (max)
PM Peak	4 vehicles (max)	1 vehicles (max)
Alternative 3 (400 Unit Alternative)		
AM Peak	2 vehicles (max)	2 vehicles (max)
PM Peak	2 vehicles (max)	2 vehicles (max)
Alternative 4 (560 Unit Alternative)		
AM Peak	3 vehicles (max)	3 vehicles (max)
PM Peak	3 vehicles (max)	3 vehicles (max)

Camino Pablo: The Proposed Project and Action Alternatives add traffic to Camino Pablo during the AM and PM peak hours as follows:

	Eastbound	Westbound
Proposed Project		
AM Peak	2 vehicles (max)	3 vehicles (max)
PM Peak	6 vehicles (max)	6 vehicles (max)
Alternative 2 (339 Unit Alternative)		
AM Peak	1 vehicles (max)	2 vehicles (max)
PM Peak	2 vehicles (max)	1 vehicles (max)
Alternative 3 (400 Unit Alternative)		
AM Peak	2 vehicles (max)	2 vehicles (max)
PM Peak	5 vehicles (max)	5 vehicles (max)
Alternative 4 (560 Unit Alternative)		
AM Peak	2 vehicles (max)	2 vehicles (max)
PM Peak	6 vehicles (max)	6 vehicles (max)

The added trips to Camino Pablo would increase the Delay Index by up to 0.01. The Delay Index on Camino Pablo would remain below 2.0 in the AM and PM peak hours under the Proposed Project and Action Alternatives. Therefore, this is considered a Less than Significant Impact.

Mitigation: No mitigation is available.

After

Mitigation: *Significant and Unavoidable; Proposed Project and All Action Alternatives*

There is no mitigation measure available to reduce the AM impacts to westbound SR 24 traffic to a less than significant level. Therefore, this impact would be significant and unavoidable. This impact was anticipated in the Town of Moraga 2002 General Plan EIR, and the Town adopted a statement of overriding considerations in Resolution 21-2002. The Proposed Project and Alternatives 3 and 4 would generate less impact to SR 24 than Alternative 2.

Impact: **4.F-2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Less than Significant Impact; Proposed Project and All Action Alternatives*

All signalized intersections in Moraga will operate at acceptable levels with the added traffic from the Proposed Project or Action Alternatives.

Mitigation: No mitigation is required.

Impact: **4.F-3. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the Town of Moraga?**

Analysis: *No Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

Moraga Road/Corliss Drive (intersection #49): The minimum acceptable overall intersection operation is LOS C with 25 seconds of vehicle delay. The Proposed Project and the Action Alternatives would add vehicle trips to this intersection and would have the following operational impacts.

In addition, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives, and the side street operations would also be unacceptable LOS F for both the AM and PM hours. The unacceptable intersection operation represents a Significant Impact.

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Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	C	23	--	A	6	--
Proposed Project	E	38	160	A	12	255
Alternative 2 (339 Unit Alternative)	D	31	92	A	8	112
Alternative 3 (400 Unit Alternative)	D	33	107	A	10	185
Alternative 4 (560 Unit Alternative)	E	36	142	A	11	232

Mitigation: **4.F-3: Install a traffic signal with the current lane configuration at the Corliss Drive/Moraga Way intersection.**

The signal shall have actuated controls. Signal phasing and coordination shall be determined during signal design. Installation shall include the traffic signal equipment with optimized signal phasing/timing plans and coordination with adjacent traffic signals. Traffic signal equipment shall include ADA compliant features. The intersection shall be reconstructed as necessary to accommodate the traffic signal installation including consideration for pedestrians and bicyclists. Signal installation shall meet Contra Costa County design standards and be subject to the review and approval of the Town and County. The full complement of signal warrants shall be investigated prior to signal installation.

This mitigation measure is currently in Moraga's fee program. The Project Applicant is responsible for the fair share contribution to this measure as determined by the fee program in effect at the time permits are issued. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected Project's impact, then the Project Applicant shall fully fund and construct the mitigation measure, and shall be reimbursed for the portion that is beyond their fair share contribution, from future available funding sources.

After

Mitigation: *Less than Significant; Proposed Project and All Action Alternatives*

The Moraga Road/Corliss Drive intersection will operate at LOS B with traffic signal installation. Therefore, with mitigation, this impact would be less than significant.

Impact: **4.F-4. Will the Project create adverse vehicular impacts for signalized intersections on streets in the City of Lafayette?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

Moraga Road/Moraga Boulevard (intersection #25): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	E	--	--	C	20	--
Proposed Project	E	--	36	C	32	56
Alternative 2 (339 Unit Alternative)	E	--	25	C	27	21
Alternative 3 (400 Unit Alternative)	E	--	23	C	29	46
Alternative 4 (560 Unit Alternative)	E	--	31	C	31	51

The poor intersection operations in the AM peak hour are due, in part, to the school-related traffic; although vehicle queues at adjacent intersections also impact intersection operations.

While the intersection would continue to operate at LOS E with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the AM peak hour is a Significant Impact.

Moraga Road/Brook Street (intersection #26): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

The poor intersection operations in the AM peak hour are due, in part, to the school-related traffic; although vehicle queues at adjacent intersections also impact intersection operations.

While the intersection would continue to operate at LOS E with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the AM peak hour is a Significant Impact.

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Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	E	--	--	C	21	--
Proposed Project	E	--	36	C	28	56
Alternative 2 (339 Unit Alternative)	E	--	25	C	27	21
Alternative 3 (400 Unit Alternative)	E	--	23	C	28	46
Alternative 4 (560 Unit Alternative)	E	--	31	C	28	51

Mitigation: 4.F-4. Enhance Transit Service in the Lamorinda Area South of SR 24 and Reduce the Community Center Program.

No mitigation is available to reduce this impact to a less than significant level. Moraga's General Plan Adoption Resolution 21-2002 made findings that general plan-level development would cause significant and unavoidable intersection impacts in the City of Lafayette.

While no feasible mitigation measures for the study intersections listed above have been identified, measures could be imposed to lessen the project's impact on the road system to traffic levels at or below the travel levels predicted under general plan buildout.

Transit Service: Enhanced transit service in the Lamorinda area, south of SR 24, would be needed to further reduce the traffic effects from the Proposed Project and Alternative 3 (560 unit). The current service, operated by County Connection, operates buses with 20 minute headways during peak school and commute times, but service is reduced to one hour (or less) during non-peak times. Enhanced service in Lamorinda could have stylized buses that are 30 feet or less in length; transit stop amenities; real-time bus information; reduced headways; up to 16 hours of weekday and weekend service; reduced fares such as the Eco-Pass Program provided by AC Transit; and patron parking at select transit stops.

The transit component of the CCTA model was used to estimate bus ridership increases with an enhanced transit service. Bus headways for Route 106 and Route 206 in the CCTA model were reduced to 10 minutes and 20 minutes during the on- and off-peak periods, respectively. With these changes, the CCTA model indicates that daily bus ridership would increase by about 1,130 riders. At an average occupancy of 1.2 people per car, the increased ridership would reduce daily automobile traffic in the area by about 950 cars.

Enhanced transit service requires capital and operating costs, beyond what a single land development project could provide. A successful system

would require financial support from residents, businesses, and governmental agencies.

Community Center: As an alternative to the enhanced transit service described above, the proposed community center program could be reduced to decrease AM and PM peak hour traffic volumes. The Proposed Project, Alternative 3 and Alternative 4 each propose a 30,000 square foot community center that would attract users from outside the Town of Moraga. This is expected to result in 7 and 30 vehicle trips on Moraga Road through Lafayette during the AM and PM peak hours, respectively. Changing the community center program to a local-focus and reducing the size to about 16,000 square feet would eliminate these peak hour trips; thereby reducing the community center's impact on roads and intersections located in Lafayette. With these reductions alone (e.g., without the proposed transit improvements), both Alternative 3 and Alternative 4 would be less impacting than Alternative 2 (the general plan alternative) during the critical AM peak hour.

Therefore, under Alternatives 3 and 4, either enhanced transit service or community center program reductions could be used to reduce increased traffic volumes to at or below Alternative 2 levels. The Proposed Project would require the enhanced transit service to reduce traffic levels to at or below Alternative 2 levels, but could also use a reduction in the community center program to reduce the amount of new transit that would be required.

After

Mitigation: *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

As stated below, intersection and road improvement mitigation measures (e.g., those listed below) necessary to reduce the impacts to the Moraga Road corridor do not have local support for implementation. Measures identified above would not reduce the impact to a less than significant level, but would reduce impacts from the Proposed Project and Action Alternatives (as necessary) to levels at or below those predicted for the General Plan alternative. Therefore, this impact would remain significant and unavoidable under both the Proposed Project and all Action Alternatives.

Several measures were considered over the years to improve both existing and future traffic flow on Moraga Road through Downtown Lafayette. These measures were debated extensively in the Lamorinda community during the preparation of the *Lamorinda Traffic Study* (August 1, 1994) and ultimately rejected by the community. Some of the key measures considered and rejected include:

- Oak Hill Road Extension. This project would have extended Oak Hill Road south from Mt. Diablo Boulevard, intersecting Moraga Road at the La Fiesta Square retail driveway. Subsequent to the

community rejecting this alternative, Lafayette approved this area for redevelopment.

- First Street Extension. There were several variations of this project considered. One variation would have extended First Street to Moraga Road via the Moraga Boulevard alignment. Another would have introduced a new connection north of Moraga Boulevard. A third variation would have extended First Street south from School Street, intersecting either Moraga Road or St. Mary's Road. Subsequent to the community rejecting these alternatives, the City of Lafayette converted First Street to one-way southbound between Golden Gate Way and School Street. In addition, the City constructed a separated path along the corridor for pedestrians and bicycles.
- Moraga Road Widening. There were several alternatives considered for widening Moraga Road through Downtown Lafayette to provide turn lanes and bike lanes. Consideration was also given to eliminating left turn movements at driveways and intersections. While these measures were rejected, the physical environment along the corridor has not changed since the Lamorinda Traffic Study.
- Moraga Road Extension. An extension of Moraga Road north of Mt. Diablo Boulevard to a collector/distributor road was considered. The collector/distributor road would intersect Oak Hill Road opposite the SR 24 Eastbound Off-Ramp and at First Street opposite the Eastbound On-Ramp. While this measure was rejected, the physical environment along the corridor has not changed since the Lamorinda Traffic Study.
- Pleasant Hill Road Extension. Alternatives were considered for extending Pleasant Hill Road south of Olympic Boulevard to provide another connection between Lamorinda and the regional road system in an effort to divert traffic away from Downtown Lafayette and St. Mary's Road. Subsequent to the community rejecting this alternative, the City of Lafayette approved a single family housing development with its main access to Olympic Boulevard at Pleasant Hill Road.

Impact: **4.F-5. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the City of Lafayette?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

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Deer Hill Drive /Oak Hill Road (intersection #13): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	E	38	--	E	41	--
Proposed Project	E	38	8	E	41	16
Alternative 2 (339 Unit Alternative)	E	38	1	E	41	6
Alternative 3 (400 Unit Alternative)	E	38	6	E	41	13
Alternative 4 (560 Unit Alternative)	E	38	7	E	41	15

Similar to existing conditions, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at unacceptable LOS E; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Glenside Drive/Reliez Station Road (intersection #39): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	F	91	--	E	49	--
Proposed Project	F	103	39	F	58	46
Alternative 2 (339 Unit Alternative)	F	102	34	F	57	34
Alternative 3 (400 Unit Alternative)	F	97	21	F	55	28
Alternative 4 (560 Unit Alternative)	F	100	32	F	57	39

Similar to existing conditions, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

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Because the intersection would continue to operate at LOS E or F; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Glenside Drive/Burton Drive (intersection #40): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	D	34	--	D	25	--
Proposed Project	E	43	42	D	32	50
Alternative 2 (339 Unit Alternative)	E	42	35	D	29	35
Alternative 3 (400 Unit Alternative)	E	39	24	D	29	30
Alternative 4 (560 Unit Alternative)	E	41	35	D	31	43

Similar to existing conditions, the peak hour traffic signal warrant would be met during the AM peak hour for the Proposed Project and all Action Alternatives.

Because the intersection would deteriorate from LOS D to E in the AM peak hour; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Pleasant Hill Road/Olympic Boulevard (intersection #44): The minimum acceptable operation for this intersection is LOS D with 35 seconds of vehicle delay. The Proposed Project and Action Alternatives would add trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	F	55	--	E	48	--
Proposed Project	F	60	40	F	52	46
Alternative 2 (339 Unit Alternative)	F	62	34	E	49	33
Alternative 3 (400 Unit Alternative)	F	58	21	F	50	27
Alternative 4 (560 Unit Alternative)	F	59	32	F	51	38

Similar to existing conditions, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS E or F; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Mitigation: **4.F-5: Install traffic signals at the following Lafayette intersections: Deer Hill Drive/Oak Hill Road (with the current lane configuration), Glenside Drive/Reliez Station Road (widen Glenside Drive for a left turn pocket), Glenside Drive/Burton Drive (widen Glenside Drive for a left turn pocket), and Pleasant Hill Road/Olympic Boulevard (with the current lane configuration).**

The signals shall have actuated controls. Signal phasing and coordination shall be determined during signal design. Installation shall include the traffic signal equipment with optimized signal phasing/timing plans and coordination with adjacent traffic signals. Traffic signal equipment shall include ADA compliant features. The intersection shall be reconstructed as necessary to accommodate the traffic signal installation including consideration for pedestrians and bicyclists. Signal installation shall meet Contra Costa County design standards and be subject to the review and approval of Lafayette and County. The full complement of signal warrants shall be investigated prior to signal installation.

This mitigation measure is not currently in Lamorinda's fee program. The fee program should be updated to incorporate this mitigation measure. The Project Applicant is then responsible for the fair share contribution to this mitigation measure as determined by the updated fee program. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected Project's impact, then the Project Applicant shall fully fund and construct the mitigation measure, and shall be reimbursed for the portion that is beyond their fair share contribution, from future available funding sources.

After

Mitigation: *Less than Significant; Proposed Project and All Action Alternatives*

The four unsignalized Lafayette intersections will operate at acceptable conditions with traffic signal installation. Therefore, with mitigation, this impact would be less than significant. However, this mitigation measure would remain Significant and Unavoidable if Lafayette does not add the proposed intersection improvements to the Lamorinda fee program.

Impact: **4.F-6. Will the Project create adverse vehicular impacts for signalized intersections on streets in the City of Orinda?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

Camino Pablo/Brookwood Road (intersection #5): The minimum acceptable operation for this intersection is LOS E with 68 seconds of vehicle delay. The Proposed Project and Action Alternatives would add trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	E	58	--	F	98	--
Proposed Project	E	63	62	F	104	83
Alternative 2 (339 Unit Alternative)	E	63	49	E	103	49
Alternative 3 (400 Unit Alternative)	E	61	36	F	102	57
Alternative 4 (560 Unit Alternative)	E	62	53	F	103	73

While the intersection would continue to operate at LOS F during the PM peak hour with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the PM peak hour is a Significant Impact

Glorietta Boulevard/Moraga Way (intersection #9): The minimum acceptable operation for this intersection is LOS D with 45 seconds of vehicle delay. The Proposed Project and Action Alternatives would add trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	F	80	--	C	25	--
Proposed Project	F	87	72	C	28	93
Alternative 2 (339 Unit Alternative)	F	89	55	C	27	55
Alternative 3 (400 Unit Alternative)	F	83	42	C	27	63
Alternative 4 (560 Unit Alternative)	F	85	60	C	27	81

The poor intersection operations are due, in part, to the school-related traffic turning to/from Glorietta Boulevard.

While the intersection would continue to operate at LOS F with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the AM peak hour is a Significant Impact

Ivy Drive/Moraga Way (intersection #10): The minimum acceptable operation for this intersection is LOS D with 45 seconds of vehicle delay. The Proposed Project and Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Existing Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Existing	D	43	--	C	24	--
Proposed Project	D	48	93	C	26	104
Alternative 2 (339 Unit Alternative)	D	48	70	C	25	67
Alternative 3 (400 Unit Alternative)	D	45	55	C	25	63
Alternative 4 (560 Unit Alternative)	D	47	80	C	25	90

The poor intersection operations are due, in part, to the school-related traffic turning to/from Ivy Drive. While the AM peak hour intersection operations would remain LOS D, the addition of vehicle trips in the AM peak hour reduces the delay to an unacceptable level and is therefore a Significant Impact

Mitigation: **4.F-4. Enhance Transit Service in the Lamorinda Area South of SR 24 and Reduce the Community Center Program.**

Mitigation Measure 4.F-4 provided for impacts to Lafayette intersections that also apply to Orinda intersections. No mitigation is available to reduce this impact to a less than significant level. Moraga's General Plan Adoption Resolution 21-2002 made findings that general plan-level development would cause significant and unavoidable intersection impacts in the City of Orinda.

After

Mitigation: *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

As stated below, intersection and road improvement mitigation measures (e.g., those listed below) necessary to reduce the impacts to the Moraga Way corridor do not have local support for implementation. Measures

identified above would not reduce the impact to a less than significant level, but would reduce impacts from the Proposed Project and Action Alternatives (as necessary) to levels at or below those predicted for the General Plan alternative. Therefore, this impact would remain significant and unavoidable under both the Proposed Project and all Action Alternatives.

Several measures were considered over the years to improve both existing and future traffic flow on Moraga Way through Orinda. These measures were debated extensively in the Lamorinda community during the preparation of the *Lamorinda Traffic Study* (August 1, 1994) and ultimately rejected by the community. Some of the key measures considered and rejected include:

- Gateway Boulevard Extension. This project would have extended Gateway Boulevard from SR 24 south to the Town of Moraga, and included an extension of Brookside Road. This extension would have diverted traffic from Moraga Way, improving operations at the three impacted intersections. Subsequent to rejecting this alternative, Orinda approved an alternative land development plan, precluding this extension.
- SR 24 Eastbound Off-Ramp Widening. Several years back the City of Orinda considered widening the SR 24 eastbound Off-Ramp to provide three lanes at its intersection with Camino Pablo (two lanes currently exist). The project was rejected by the City of Orinda for a variety of reasons including concerns regarding noise and aesthetics.

Impact: 4.F-7. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the City of Orinda?

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Less than Significant Impact; Proposed Project and All Action Alternatives*

All unsignalized study intersections will operate at acceptable levels with the addition of traffic from the Project and all of the Action Alternatives

Mitigation: No mitigation is required.

Impact: 4.F-8. Will the Project create adverse transit impacts?

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Less than Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and Action Alternatives would add additional transit riders to the County Connection (Route 106). The number of riders would generally be less than 10 patrons per hour even at peak times, and the buses currently operate at less than 50% occupancy. Therefore, there will be adequate seating on each bus to accommodate the additional riders, and the increased boarding activity will not negatively impact transit headways. This represents a Less than Significant Impact.

Enhanced transit service is discussed as a potential mitigation for Proposed Project and Action Alternative impacts (see Measure 4.F-4). Increased transit ridership would require capital and operating costs beyond what a single land development project could provide. A successful system would require financial support from residents, businesses, and governmental agencies. County Connection's Service Expansion Policy (2000) requires that all new or improved service requested by private entities shall be fully subsidized by the private entity.

Mitigation: No mitigation is required.

Impact: **4.F-9. Will the Project create hazards due to design features or will access and/or internal circulation be unsatisfactory?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and Action Alternatives have not been fully defined and so specific recommendations and mitigation measures pertaining to internal circulation can not be identified at this time.

The project, because it is mixed use, will likely be built in phases to meet market demands. The road system supporting each development needs to be constructed to serve the new development areas and to ensure logical circulation for residents, patrons, guests, workers, and others including emergency providers.

Therefore, this impact is considered to be potentially significant. However, there are best practices that can be implemented during design development of the site.

Mitigation: **4.F-9: Ensure Adequate Internal Circulation within the MCSP.**

Implement the following measures:

- Minimize the cul-de-sac streets in both commercial and residential areas. Where cul-de-sac streets are constructed, provide a

pedestrian connection through the street to maximize pedestrian circulation.

- Maintain streets for two-way traffic flow.
- Allow on-street parking to the greatest extent possible.
- Design streets to meet local fire district Codes.
- Provide the Laguna Creek crossing, connecting the Village area to the Town Center, when areas west of the creek are developed; in order to minimize internal traffic from using Moraga Way.
- Provide a second road connection to the Village area from Moraga Way between Laguna Creek and Camino Ricardo; in order to maintain effective emergency circulation.
- Provide a connection between the Town Center area and the St. Mary's/Moraga Road intersection when either the Laguna Creek crossing is constructed or the Town Center area east of the creek begins to be developed; in order to maintain safe and efficient traffic flow to and from Moraga Road.
- Provide a School Street extension from the St. Mary's/Moraga Road intersection to Moraga Way and maintain this corridor as a through street; in order to minimize cumulative and site-generated traffic impacts on the Moraga Way/Moraga Road intersection.

After

Mitigation: *Less than Significant Impact; Proposed Project and All Action Alternatives*

Implementation of the measures listed above would ensure adequate internal circulation and would reduce potential traffic hazards. Therefore, with mitigation, this impact would be less than significant.

Impact: **4.F-10. Will the Project create adverse impacts on the use of bicycle and/or pedestrian travel ways?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and Action Alternatives have not been fully defined and so specific recommendations and mitigation measures pertaining to bicycle and pedestrian use can not be identified at this time. So, this impact is considered to be potentially significant. However, there are best practices that can be implemented during design development of the site.

Two alternative site locations have been proposed for the community center. Site "A" is located immediately south of the St. Mary's Road

intersection with Moraga Road. Site “B” is located several hundred feet north of St. Mary’s Road along Moraga Road, opposite the Moraga Commons. The Moraga Road intersection with St. Mary’s Road provides a controlled pedestrian connection between Site “A” and the Commons. There is no pedestrian crossing between Site “B” and the Commons. This impact is considered to be potentially significant.

Mitigation: 4.F-10a: Reduce Potential Vehicular Conflicts with Bicycles and Pedestrian Travel Ways.

Implement the following measures:

- Limit the number of driveways (to the extent possible) between intersections; thereby, reducing the number of intersecting conflict points for vehicles, bicycles, and pedestrians.
- Provide parallel rather than angle parking on roadways with Class II bike lanes or Class III bike routes.
- Provide bicycle detection and pedestrian countdown signal heads at signalized intersections.
- Provide bicycle parking near commercial entrances, transit stops, and/or on sidewalks (in street furniture zone)
- Provide 12-foot width for designated multi-use trails i.e., shared bicycle and pedestrian use.
- Provide continuous pedestrian walkways on all streets.
- Minimize corner radii at intersections to the greatest extent possible.
- Provide ADA-compliant ramps at all intersections with sidewalks and/or paths to maintain continuous accessible paths.
- Maintain 6-foot pedestrian zones along commercial and residential streets.
- Maintain a minimum 4-foot wide ADA compliant pedestrian zone across driveways on streets with sidewalks.
- Minimize lane width on streets without bike designations to the greatest extent possible while still complying with fire district requirements.
- Provide pedestrian-scale lighting along all pedestrian facilities in the commercial and residential areas.

Mitigation: 4.F-10b: Provide an enhanced pedestrian crossing on Moraga Road between the community center Site “B” and the Moraga Commons.

The enhanced crossing may include advanced warning signs and flashing beacons, advanced limit lines, high visibility markings, and in-pavement

flashers. The crossing shall be designed for the prevailing traffic speed on Moraga Road, and it shall be incorporated into a pedestrian path system at a logical location for crossing that maximizes pedestrian route directness.

After

Mitigation: *Less than Significant; Proposed Project and All Action Alternatives*

Implementation of the measures above would ensure adequate bicycle and pedestrian circulation and would reduce potential traffic hazards. Therefore, with mitigation, this impact would be less than significant.

Impact: **4.F-11. Will the Project create adverse vehicular parking impacts?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

The Proposed Project and Action Alternatives have not been fully defined and so specific recommendations and mitigation measures pertaining to parking can not be identified at this time. Therefore, this impact is considered to be potentially significant. However, there are best practices that can be implemented during design development of the site.

Mitigation: **4.F-11: Provide Adequate Parking Supplies.**

Provide a parking management plan that shows the expected parking demands and the required parking supply to meet the expected demands. Consideration should be given to meeting the Town Code unless parking studies approved by the Town support parking supply adjustments.

After

Mitigation: *Less than Significant; Proposed Project and All Action Alternatives*

Implementation of the measure above would ensure adequate parking supply and would reduce potential parking impacts. Therefore, with mitigation, this impact would be less than significant.

4.F-4 CUMULATIVE IMPACTS

There are several Project impacts – either less than significant or significant – identified in Section: 4.F-3 Environmental Impacts and Mitigation Measures (Existing plus Project). These same impacts would also occur under the two future baseline scenarios considered in the study: Approved Baseline and Cumulative Baseline. The assumed land uses for each of these scenarios is provided in Table 4.F-4 and Table 4.F-5, respectively.

Table 4.F-14 presents the intersection LOS results at each study intersection under Approved scenario, and Table 4.F-15 presents the same information for the Cumulative scenario. Refer to Appendix D for the resulting intersection turning movement forecasts at the study intersections.

Table 4.F-11 presents the traffic contributions at each study intersection from the project and other traffic components including: existing traffic, traffic from approved developments, and traffic from other cumulative development (consistent with the various general plan documents) that could occur by Year 2030.

Impact: 4.F-C1. Will the Project create adverse vehicular impacts on Routes of Regional Significance in the Cumulative Baseline?

Analysis: *No Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

State Route 24: The Project and all the Action Alternatives add traffic to SR 24 during the AM and PM peak hours (refer to Impact 4.F-1). As indicated in Table 4.F-3 the Delay Index on SR 24 exceeds the acceptable 2.0 threshold in the westbound direction during the AM peak hour and in both the east and westbound directions during the PM peak hour. This is considered a Significant Impact.

Pleasant Hill Road: The Project and Action Alternatives add traffic to this corridor during the AM and PM peak hours (refer to Impact 4.F-1). As indicated in Table 4.F-3, the Delay Index on Pleasant Hill Road exceeds the acceptable 2.0 threshold in the southbound direction during the AM peak hour and in both the north and southbound directions during the PM peak hour. This is considered a Significant Impact.

Camino Pablo: The Project and Action Alternatives add traffic to Camino Pablo during the AM and PM peak hours (refer to Impact 4.F-1). As indicated in Table 4.F-3, the Delay Index will remain better than the 2.0 threshold. This is considered a Less than Significant Impact.

Mitigation: No mitigation is available.

After

Mitigation: *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

While Camino Pablo would continue to operate within acceptable levels under the Cumulative condition, both SR 24 and Pleasant Hill Road would substantially exceed their thresholds, and any added traffic to these two corridors would be considered to be significant and unavoidable. The Proposed Project and Alternatives 3 and 4 would generate less impact on the Routes of Regional Significance than Alternative 2.

Impact: **4.F-C2. Will the Project create adverse vehicular impacts for signalized intersections on streets in the Town of Moraga for either the Approved or Cumulative Baselines?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

All signalized intersection in Moraga will operate at acceptable levels for the Approved Baseline with the added traffic from the Proposed Project or any of the Action Alternatives.

One signalized intersection in Moraga will operate at an unacceptable level for the Cumulative Baseline with the added traffic from the Proposed Project or any of the Action Alternatives.

Moraga Way/Moraga Road (intersection #11): The minimum acceptable operation for this intersection is LOS C with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	C	33	--	D	38	--
Proposed Project	D	36	101	D	47	185
Alternative 2 (339 Unit Alternative)	C	35	50	D	41	72
Alternative 3 (400 Unit Alternative)	D	36	70	D	44	135
Alternative 4 (560 Unit Alternative)	D	37	92	D	46	170

The deterioration in AM peak hour LOS from C to D combined with the continued LOS D operations during the PM peak hour with the Proposed

Project and the Action Alternatives, and the addition of vehicle trips in the AM and PM peak hours is a Significant Impact

Mitigation: **4.F-C2: School Street shall remain open to general vehicle circulation between Moraga Way and Moraga Road at St. Mary's Road.**

After

Mitigation: *Less than Significant; Proposed Project and All Action Alternatives*

The Moraga Way approach to Moraga Road would need to be widened to provide two left-turn lanes and one right-turn lane unless School Street remains open to general vehicle use between Moraga Way and Moraga Road at St. Mary's Road.

Impact: **4.F-C3. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the Town of Moraga?**

Analysis: *No Impact; Alternative 1 (No Project Alternative)*

The No Project Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

One unsignalized intersection in Moraga will operate at an unacceptable level for the Approved and Cumulative Baselines with the added traffic from the Proposed Project or any of the Action Alternatives.

Moraga Road/Corliss Drive (intersection #49): The minimum acceptable overall intersection operation is LOS C with 25 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	D	28	--	A	7	--
Proposed Project	E	45	160	B	15	255
Alternative 2 (339 Unit Alternative)	E	37	92	A	10	112
Alternative 3 (400 Unit Alternative)	E	39	107	B	12	185
Alternative 4 (560 Unit Alternative)	E	43	142	B	14	232

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Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	E	50	--	B	15	--
Proposed Project	F	73	160	D	31	255
Alternative 2 (339 Unit Alternative)	F	64	92	C	22	112
Alternative 3 (400 Unit Alternative)	F	66	107	D	26	185
Alternative 4 (560 Unit Alternative)	F	72	142	D	29	232

In addition, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives, and the side street operations would also be unacceptable LOS F for both the AM and PM hours. The unacceptable intersection operations represents a Significant Impact for the both the Approved and Cumulative Baseline scenarios.

Mitigation: **4.F-C3 Implement Mitigation Measure 4.F-3.**

After

Mitigation: *Less than Significant; Proposed Project and All Action Alternatives*

The Moraga Road/Corliss Drive intersection will operate at LOS C or better with traffic signal installation. Therefore, with mitigation, this impact would be less than significant.

Impact: **4.F-C4. Will the Project create adverse vehicular impacts for signalized intersections on streets in the City of Lafayette?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

Five signalized intersection in Lafayette will operate at unacceptable levels for the Approved and Cumulative Baselines with the added traffic from the Proposed Project or any of the Action Alternatives.

Mt. Diablo Boulevard/Moraga Road (intersection #24): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

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Impact Summary – Approve Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Moraga Road/Moraga Boulevard (intersection #25): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approve Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

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Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Moraga Road/Brook Street (intersection #26): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approve Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alt)	F	--	31	F	--	51

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The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Moraga Road/School Street (intersection #27): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approve Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Moraga Road/St. Mary's Road North (intersection #28): The minimum acceptable intersection operation is LOS D with 55 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

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Impact Summary – Approve Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	--	--	F	--	--
Proposed Project	F	--	36	F	--	56
Alternative 2 (339 Unit Alternative)	F	--	25	F	--	21
Alternative 3 (400 Unit Alternative)	F	--	23	F	--	46
Alternative 4 (560 Unit Alternative)	F	--	31	F	--	51

The addition of vehicle trips in the AM and PM peak hours at locations expected to operate at unacceptable levels is a Significant Impact.

Mitigation: No mitigation is available. Refer to Impact 4.F-4 for additional discussion.

Moraga's Resolution 21-2002 stated that general plan-level development would cause significant and unavoidable intersection impacts in the City of Lafayette.

After

Mitigation: *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

As stated in Impact 4.F-4, mitigation measures necessary to reduce the impacts to the Moraga Road corridor do not have local support for implementation. Therefore, this impact is significant and unavoidable.

Impact: **4.F-C5. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the City of Lafayette?**

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

Five unsignalized intersection in Lafayette will operate at unacceptable levels for the Approved and Cumulative Baselines with the added traffic from the Proposed Project or any of the Action Alternatives.

Deer Hill Drive /Oak Hill Road (intersection #13): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	E	39	--	E	47	--
Proposed Project	E	39	8	E	48	16
Alternative 2 (339 Unit Alternative)	E	39	1	E	47	6
Alternative 3 (400 Unit Alternative)	E	39	6	E	48	13
Alternative 4 (560 Unit Alternative)	E	39	7	E	48	15

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	E	39	--	F	60	--
Proposed Project	E	39	8	F	62	16
Alternative 2 (339 Unit Alternative)	E	39	1	F	61	6
Alternative 3 (400 Unit Alternative)	E	39	6	F	62	13
Alternative 4 (560 Unit Alternative)	E	39	7	F	62	15

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Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS E or F; the addition of any trips in the AM and PM peak hours is a Significant Impact.

Glenside Drive/St. Mary's Road South (intersection #35): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	C	22	--	C	22	--
Proposed Project	D	26	46	D	28	69
Alternative 2 (339 Unit Alternative)	C	25	35	D	26	35
Alternative 3 (400 Unit Alternative)	C	24	29	C	25	50
Alternative 4 (560 Unit Alternative)	C	25	40	D	27	63

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	E	40	--	F	44	--
Proposed Project	E	48	46	F	55	69
Alternative 2 (339 Unit Alternative)	E	46	35	F	50	35
Alternative 3 (400 Unit Alternative)	E	46	29	F	51	50
Alternative 4 (560 Unit Alternative)	E	48	40	F	52	63

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS E or F with cumulative traffic; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

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Glenside Drive/Reliez Station Road (intersection #39): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	98	--	F	56	--
Proposed Project	F	110	39	F	65	46
Alternative 2 (339 Unit Alternative)	F	109	34	F	63	34
Alternative 3 (400 Unit Alternative)	F	104	21	F	61	28
Alternative 4 (560 Unit Alternative)	F	108	32	F	63	39

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	146	--	F	102	--
Proposed Project	F	159	39	F	109	46
Alternative 2 (339 Unit Alternative)	F	157	34	F	111	34
Alternative 3 (400 Unit Alternative)	F	152	21	F	107	28
Alternative 4 (560 Unit Alternative)	F	156	32	F	109	39

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS F; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Glenside Drive/Burton Drive (intersection #40): The minimum acceptable intersection operation is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

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Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	E	38	--	D	28	--
Proposed Project	E	45	42	D	35	50
Alternative 2 (339 Unit Alternative)	E	45	35	D	32	35
Alternative 3 (400 Unit Alternative)	E	43	24	D	32	30
Alternative 4 (560 Unit Alternative)	E	44	35	D	34	43

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	E	44	--	F	57	--
Proposed Project	F	76	42	F	65	50
Alternative 2 (339 Unit Alternative)	F	78	35	F	63	35
Alternative 3 (400 Unit Alternative)	F	70	24	F	61	30
Alternative 4 (560 Unit Alternative)	F	76	35	F	65	43

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would deteriorate from LOS D to E in the AM peak hour; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

Pleasant Hill Road/Olympic Boulevard (intersection #44): The minimum acceptable operation for this intersection is LOS D with 35 seconds of vehicle delay. The Project and all of the Action Alternatives would add trips to this intersection and have the following operational impacts.

Similar to Existing, the peak hour traffic signal warrant would be met during the AM and PM peak hours for the Proposed Project and all Action Alternatives.

Because the intersection would continue to operate at LOS F; the addition of any vehicle trips in the AM and PM peak hours is a Significant Impact.

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Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	59	--	F	52	--
Proposed Project	F	65	40	F	55	46
Alternative 2 (339 Unit Alternative)	F	66	34	F	53	33
Alternative 3 (400 Unit Alternative)	F	62	21	F	54	27
Alternative 4 (560 Unit Alternative)	F	64	32	F	55	38

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	92	--	F	73	--
Proposed Project	F	95	40	F	76	46
Alternative 2 (339 Unit Alternative)	F	98	34	F	74	33
Alternative 3 (400 Unit Alternative)	F	95	21	F	76	27
Alternative 4 (560 Unit Alternative)	F	95	32	F	76	38

Mitigation: 4.F-C5 Implement Mitigation 4.F-5 and Install traffic signals at the Glenside Drive/St. Mary's Road South intersection (also widen St. Mary's Road for a left turn pocket)

After

Mitigation: *Less than Significant; Proposed Project and All Action Alternatives*

The five unsignalized Lafayette intersections will operate at acceptable conditions with traffic signal installation. Therefore, with mitigation, this impact would be less than significant.

Impact: 4.F-C6. Will the Project create adverse vehicular impacts for signalized intersections on streets in the City of Orinda?

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *Significant Impact; Proposed Project and All Action Alternatives*

Camino Pablo/Brookwood Road (intersection #5): The minimum acceptable operation for this intersection is LOS E with 68 seconds of vehicle delay. The Project and all of the Action Alternatives would add trips to this intersection and have the following operational impacts.

Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	E	64	--	F	115	--
Proposed Project	E	70	62	F	122	83
Alternative 2 (339 Unit Alternative)	E	69	49	F	120	49
Alternative 3 (400 Unit Alternative)	E	67	36	F	119	53
Alternative 4 (560 Unit Alternative)	E	69	31	F	121	73

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	92	--	F	163	--
Proposed Project	F	100	62	F	172	83
Alternative 2 (339 Unit Alternative)	F	98	49	F	169	49
Alternative 3 (400 Unit Alternative)	F	96	36	F	170	53
Alternative 4 (560 Unit Alternative)	F	97	31	F	171	73

While the intersection would continue to operate at LOS F during the PM peak hour with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the PM peak hour is a Significant Impact

Glorietta Boulevard/Moraga Way (intersection #9): The minimum acceptable operation for this intersection is LOS D with 45 seconds of vehicle delay. The Project and all of the Action Alternatives would add trips to this intersection and have the following operational impacts.

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Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	F	88	--	C	27	--
Proposed Project	F	94	72	C	29	93
Alternative 2 (339 Unit Alternative)	F	97	55	C	28	55
Alternative 3 (400 Unit Alternative)	F	91	42	C	28	63
Alternative 4 (560 Unit Alternative)	F	93	60	C	29	81

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	F	123	--	D	39	--
Proposed Project	F	132	72	D	43	93
Alternative 2 (339 Unit Alternative)	F	135	55	D	42	55
Alternative 3 (400 Unit Alternative)	F	130	42	D	42	63
Alternative 4 (560 Unit Alternative)	F	129	60	D	43	81

While the intersection would continue to operate at LOS F with the Proposed Project and the Action Alternatives, the addition of vehicle trips in the AM peak hour is a Significant Impact

Ivy Drive/Moraga Way (intersection #10): The minimum acceptable operation for this intersection is LOS D with 45 seconds of vehicle delay. The Project and all of the Action Alternatives would add vehicle trips to this intersection and have the following operational impacts.

The addition of vehicle trips in the AM peak hour is a Significant Impact. In addition, the AM peak hour intersection operations would deteriorate from LOS D to LOS E with the Proposed Project and the Action Alternatives. This too is considered a Significant Impact

MORAGA CENTER SPECIFIC PLAN**DRAFT ENVIRONMENTAL IMPACT REPORT**

Impact Summary – Approved Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Approved	D	44	--	C	24	--
Proposed Project	D	51	93	C	27	104
Alternative 2 (339 Unit Alternative)	D	51	70	C	27	67
Alternative 3 (400 Unit Alternative)	D	48	55	C	26	63
Alternative 4 (560 Unit Alternative)	D	50	80	C	27	96

Impact Summary – Cumulative Plus Project						
	AM Peak Hour			PM Peak Hour		
	LOS	Delay	Trips	LOS	Delay	Trips
Cumulative	D	61	--	C	30	--
Proposed Project	E	72	93	D	37	104
Alternative 2 (339 Unit Alternative)	E	72	70	C	34	67
Alternative 3 (400 Unit Alternative)	E	66	55	C	34	63
Alternative 4 (560 Unit Alternative)	E	70	80	D	35	96

Mitigation: No mitigation is available. Refer to Impact 4.F-6.

Moraga's Resolution 21-2002 stated that general plan-level development would cause significant and unavoidable intersection impacts in the City of Orinda.

After

Mitigation: *Significant and Unavoidable Impact; Proposed Project and All Action Alternatives*

As stated in Impact 4.F-6, mitigation measures necessary to reduce the impacts to the Moraga Way corridor do not have local support for implementation. Therefore, this impact is significant and unavoidable.

Impact: 4.F-C7. Will the Project create adverse vehicular impacts for unsignalized intersections on streets in the City of Orinda?

Analysis: *No Impact; Alternative 1 (No Action Alternative)*

The No Action Alternative would not result in any change to current transportation systems.

Analysis: *No Impact; Proposed Project and All Action Alternatives*

All unsignalized study intersections will operate at acceptable levels with the addition of traffic from the Project and all of the Action Alternatives

Mitigation: No mitigation is required.

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
Orinda Intersections											
1. Orinda Way/Santa Maria Way	AM	12	B	12	B	12	B	12	B	12	B
	PM	15	B	15	B	15	B	15	B	15	B
2. Camino Pablo/Santa Maria Way	AM	7	A	7	A	7	A	7	A	7	A
	PM	22	C	22	C	22	C	22	C	22	C
3. Camino Pablo/BART Driveways	AM	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)	1 (16)	A (C)
	PM	3 (28)	A (D)	3 (29)	A (D)	3 (29)	A (D)	3 (29)	A (D)	3 (29)	A (D)
4. Camino Pablo/SR 24 EB Ramps	AM										
	PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5. Camino Pablo/ Brookwood Road	AM	64	E	70	E	69	E	67	E	69	E
	PM	115	F	122	F	120	F	119	F	121	F
6. Camino Pablo/ Moraga Way	AM	13	B	13	B	13	B	13	B	13	B
	PM	18	B	18	B	18	B	18	B	18	B
7. Brookwood Road/Moraga Way	AM	18	C	18	C	18	C	18	C	18	C
	PM	15	C	15	C	15	C	15	C	15	C
8. Bryant Way/Moraga Way	AM	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)	5 (17)	A (C)
	PM	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)	6 (17)	A (C)
9. Glorietta Boulevard/ Moraga Way	AM	88	F	94	F	97	F	91	F	93	F
	PM	27	C	29	C	28	C	28	C	29	C
10. Ivy Drive/ Moraga Way	AM	44	D	51	ED	51	D	50	D	50	D
	PM	24	C	27	C	27	C	26	C	27	C

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
12. Glorietta Boulevard/ Rheem Boulevard	AM	12 (22)	B (C)	12 (22)	B (C)	12 (22)	B (C)	12 (22)	B (C)	12 (22)	B (C)
	PM	5 (16)	A (B)	5 (16)	A (B)	5 (16)	A (B)	5 (16)	A (B)	5 (16)	A (B)
Lafayette Intersections											
13. Deer Hill Drive/Oak Hill Road	AM	39	E	39	E	39	E	39	E	39	E
	PM	47	E	48	E	47	E	48	E	48	E
14. Mt. Diablo Boulevard/ Oak Hill Road	AM	28	C	28	C	28	C	28	C	28	C
	PM	33	C	34	C	34	C	34	C	34	C
15. Deer Hill Drive/SR 24 Westbound Ramps	AM	33	C	34	C	33	C	34	C	34	C
	PM	32	C	33	C	33	C	33	C	33	C
16. Deer Hill Drive/1st Street	AM	12	B	12	B	12	B	12	B	12	B
	PM	17	B	17	B	17	B	17	B	17	B
17. SR 24 Eastbound On-Ramp/1st Street	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18. Mt. Diablo Boulevard/ 1st Street	AM	31	C	31	C	31	C	31	C	31	C
	PM	29	C	29	C	29	C	29	C	29	C
19. First Street/ Golden Gate Way (East)	AM	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)	6 (12)	A (B)
	PM	5 (10)	A (A)	5 (10)	A (A)	5 (10)	A (A)	5 (10)	A (A)	5 (10)	A (A)
20. First Street/ Golden Gate Way (West)	AM	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)
	PM	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)
21. First Street/ Moraga Boulevard	AM	9	A	9	A	9	A	9	A	9	A
	PM	9	A	9	A	9	A	9	A	9	A
22. First Street/ School Street	AM	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)
	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
23. Avalon Avenue/ School Street	AM	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)	2 (13)	A (B)
	PM	1 (10)	A (A)	1 (10)	A (A)	1 (10)	A (A)	1 (10)	A (A)	1 (10)	A (A)
24. Mt. Diablo Boulevard/ Moraga Road	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
25. Moraga Road/ Moraga Boulevard	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
26. Moraga Road/ Brook Street	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
27. Moraga Road/ School Street	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
28. Moraga Road/ St. Mary's Road (North)	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
32. St. Mary's Road / Avalon Avenue	AM	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)	2 (19)	A (C)
	PM	2 (19)	A (C)	2 (20)	A (C)	2 (19)	A (C)	2 (20)	A (C)	2 (20)	A (C)
33. St. Mary's Road/ Topper Lane	AM	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (C)	3 (25)	A (C)
	PM	2 (19)	A (C)	2 (20)	A (C)	2 (19)	A (C)	2 (20)	A (C)	2 (20)	A (C)
34. Glenside Drive/St. Mary's Road (North)	AM	12	B	12	B	12	B	12	B	12	B
	PM	10	A	10	A	10	A	10	A	10	A
35. Glenside Drive/ St. Mary's Road (South)	AM	22	C	26	D	25	C	24	C	25	C
	PM	22	C	28	D	26	D	25	C	27	D
39. Glenside Drive/ Reliez Station Road	AM	98	F	110	F	109	F	104	F	108	F
	PM	56	F	65	F	63	F	61	F	63	F

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
40. Glenside Drive/ Burton Drive	AM	38	E	45	E	45	E	43	E	44	E
	PM	28	D	35	D	32	D	32	D	34	D
41. Pleasant Hill Rd/ Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	AM	14	B	14	B	14	B	14	B	14	B
	PM	18	B	18	B	18	B	18	B	18	B
42. Pleasant Hill Rd/ Old Tunnel Rd- SR 24 Eastbound Off-Ramp	AM	10	A	10	A	10	A	10	A	10	A
	PM	11	B	12	B	12	B	12	B	12	B
43. Pleasant Hill Road/ Condit Drive	AM	9	A	9	A	9	A	9	A	9	A
	PM	7	A	7	A	7	A	7	A	7	A
44. Pleasant Hill Road/ Olympic Boulevard	AM	59	F	65	F	66	F	62	F	64	F
	PM	52	F	55	F	53	F	54	F	55	F
45. Happy Valley Road/ Mt. Diablo Boulevard	AM	25	C	25	C	25	C	25	C	25	C
	PM	35	C	35	C	35	C	35	C	35	C
Moraga Intersections											
11. Moraga Way/ Moraga Road	AM	26	C	28	C	27	C	28	C	28	C
	PM	30	C	33	C	31	C	32	C	33	C
29. Campolindo Drive/Moraga Road	AM	22	C	22	C	22	C	22	C	22	C
	PM	17	B	17	B	17	B	17	B	17	B
30. Rheem Boulevard/ Moraga Road	AM	21	C	21	C	21	C	21	C	21	C
	PM	21	C	21	C	21	C	21	C	21	C
31. Moraga Road/St. Mary's Road (South)	AM	13	B	14	B	14	B	14	B	14	B
	PM	12	B	15	B	13	B	14	B	15	B
36. Bollinger Canyon Road/St. Mary's Road	AM	1 (21)	A (C)	1 (22)	A (C)	1 (22)	A (C)	1 (22)	A (C)	1 (22)	A (C)
	PM	1 (17)	A (C)	1 (18)	A (C)	1 (17)	A (C)	1 (17)	A (C)	1 (18)	A (C)

Table 4.F-14

Approved Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Approved – No Project (Alternative 1)		Approved With Proposed Project		Approved With Alternative 2 (339 units)		Approved With Alternative 3 (400 units)		Approved With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
37. Rheem Boulevard/St. Mary's Road	AM	6 (26)	A (D)	6 (31)	A (D)	6 (30)	A (D)	6 (29)	A (D)	6 (31)	A (D)
	PM	5 (27)	A (D)	6 (32)	A (D)	6 (30)	A (D)	5 (31)	A (D)	6 (31)	A (D)
38. St. Mary's Parkway/St. Mary's Road	AM	4 (16)	A (C)	4 (18)	A (C)	4 (16)	A (C)	4 (17)	A (C)	4 (18)	A (C)
	PM	6 (15)	A (C)	6 (17)	A (C)	6 (16)	A (C)	6 (17)	A (C)	6 (17)	A (C)
46. Center Street/ Rheem Boulevard	AM	9	A	9	A	9	A	9	A	9	A
	PM	10	B	10	B	10	B	10	B	10	B
47. Moraga Road/Ascot Drive	AM	10	A	10	A	10	A	10	A	10	A
	PM	8	A	8	A	8	A	8	A	8	A
48. Moraga Road/Donald Drive	AM	12	B	12	B	12	B	12	B	12	B
	PM	7	A	7	A	7	A	7	A	7	A
49. Moraga Road/Corliss Drive	AM	28 (247)	D (F)	45 (445)	E (F)	37 (352)	E (F)	39 (372)	E (F)	43 (419)	E (F)
	PM	7 (73)	A (F)	15 (190)	B (F)	10 (111)	A (F)	12 (147)	B (F)	14 (175)	B (F)
50. Moraga Way/ St. Andrews Drive	AM	11	B	12	B	12	B	11	B	12	B
	PM	12	B	12	B	12	B	12	B	12	B
51. Moraga Way/ School Street	AM	10	A	10	A	10	A	10	A	10	A
	PM	11	B	11	B	11	B	11	B	11	B

Notes:

Bold font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

Source: Fehr & Peers, 2008

Table 4.F-15

Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
Orinda Intersections											
1. Orinda Way/Santa Maria Way	AM	12	B	12	B	12	B	12	B	12	B
	PM	16	B	16	B	16	B	16	B	16	B
2. Camino Pablo/Santa Maria Way	AM	8	A	8	A	8	A	8	A	8	A
	PM	51	D	52	D	51	D	52	D	52	D
3. Camino Pablo/BART Driveways	AM	1 (24)	A (C)	1 (24)	A (C)	1 (25)	A (C)	1 (24)	A (C)	1 (24)	A (C)
	PM	22 (171)	C (F)	23 (174)	C (F)	22 (174)	C (F)	23 (174)	C (F)	23 (174)	C (F)
4. Camino Pablo/SR 24 EB Ramps	AM										
	PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5. Camino Pablo/ Brookwood Road	AM	92	F	100	F	98	F	96	F	97	F
	PM	163	F	172	F	169	F	170	F	171	F
6. Camino Pablo/ Moraga Way	AM	15	B	15	B	15	B	15	B	15	B
	PM	21	C	21	C	21	C	21	C	21	C
7. Brookwood Road/Moraga Way	AM	23	C	23	C	23	C	23	C	23	C
	PM	24	C	24	C	24	C	24	C	24	C
8. Bryant Way/Moraga Way	AM	6 (20)	A (C)	6 (20)	A (C)	6 (20)	A (C)	6 (21)	A (C)	6 (20)	A (C)
	PM	6 (21)	A (C)	6 (21)	A (C)	6 (21)	A (C)	6 (21)	A (C)	6 (21)	A (C)
9. Glorietta Boulevard/ Moraga Way	AM	123	F	132	F	135	F	130	F	129	E
	PM	39	D	43	D	42	D	42	D	43	D
10. Ivy Drive/ Moraga Way	AM	61	E	72	E	72	E	66	E	70	E
	PM	30	C	37	D	34	D	34	C	35	D

Table 4.F-15

Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
12. Glorietta Boulevard/ Rheem Boulevard	AM	17 (33)	C (D)	19 (37)	C (E)	18 (35)	C (D)	18 (35)	C (D)	18 (35)	C (D)
	PM	7 (21)	A (C)	7 (22)	A (C)	7 (21)	A (C)	7 (21)	A (C)	7 (21)	A (C)
Lafayette Intersections											
13. Deer Hill Drive/Oak Hill Road	AM	39	E	39	E	39	E	39	E	39	E
	PM	60	F	62	F	61	F	62	F	62	F
14. Mt. Diablo Boulevard/ Oak Hill Road	AM	31	C	32	C	32	C	32	C	32	C
	PM	42	D	43	D	43	D	43	D	43	D
15. Deer Hill Drive/SR 24 Westbound Ramps	AM	44	D	44	D	44	D	44	D	44	D
	PM	49	D	50	D	50	D	50	D	50	D
16. Deer Hill Drive/1st Street	AM	14	B	15	B	15	B	15	B	15	B
	PM	21	C	21	C	21	C	21	C	21	C
17. SR 24 Eastbound On-Ramp/1st Street	AM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	PM	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
18. Mt. Diablo Boulevard/ 1st Street	AM	33	C	33	C	34	C	33	C	33	C
	PM	32	C	33	C	32	C	33	C	33	C
19. First Street/ Golden Gate Way (East)	AM	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)	6 (13)	A (B)
	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)
20. First Street/ Golden Gate Way (West)	AM	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)	5 (7)	A (A)
	PM	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)	4 (7)	A (A)
21. First Street/ Moraga Boulevard	AM	10	A	10	A	10	A	10	A	10	A
	PM	9	A	9	A	9	A	9	A	9	A
22. First Street/ School Street	AM	6 (14)	A (B)	6 (14)	A (B)	6 (14)	A (B)	6 (14)	A (B)	6 (14)	A (B)
	PM	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)	6 (11)	A (B)

Table 4.F-15

Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
23. Avalon Avenue/ School Street	AM	2 (14)	A (B)	2 (14)	A (B)	2 (14)	A (B)	2 (14)	A (B)	2 (14)	A (B)
	PM	1 (11)	A (B)	1 (11)	A (B)	1 (11)	A (B)	1 (11)	A (B)	1 (11)	A (B)
24. Mt. Diablo Boulevard/ Moraga Road	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
25. Moraga Road/ Moraga Boulevard	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
26. Moraga Road/ Brook Street	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
27. Moraga Road/ School Street	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
28. Moraga Road/ St. Mary's Road (North)	AM	--	F	--	F	--	F	--	F	--	F
	PM	--	F	--	F	--	F	--	F	--	F
32. St. Mary's Road / Avalon Avenue	AM	2 (21)	A (C)	2 (21)	A (C)	2 (20)	A (C)	2 (20)	A (C)	2 (20)	A (C)
	PM	3 (24)	A (C)	3 (24)	A (C)	3 (24)	A (C)	3 (24)	A (C)	3 (24)	A (C)
33. St. Mary's Road/ Topper Lane	AM	4 (32)	A (D)	4 (32)	A (D)	4 (33)	A (D)	4 (32)	A (D)	4 (32)	A (D)
	PM	2 (23)	A (C)	2 (23)	A (C)	2 (23)	A (C)	2 (23)	A (C)	2 (23)	A (C)
34. Glenside Drive/St. Mary's Road (North)	AM	13	B	13	B	13	B	13	B	13	B
	PM	11	B	11	B	11	B	11	B	11	B
35. Glenside Drive/ St. Mary's Road (South)	AM	40	E	48	E	46	E	46	E	48	E
	PM	44	E	55	F	50	E	51	F	52	F
39. Glenside Drive/ Reliez Station Road	AM	146	F	159	F	157	F	152	F	156	F
	PM	102	F	109	F	111	F	107	F	109	F
40. Glenside Drive/ Burton Drive	AM	44	E	76	F	78	F	70	F	76	F
	PM	57	F	65	F	63	F	61	F	65	F

Table 4.F-15

Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
41. Pleasant Hill Rd/ Mt. Diablo Blvd- SR 24 Eastbound On-Ramp	AM	18	B	18	B	18	B	18	B	18	B
	PM	26	C	26	C	26	C	26	C	26	C
42. Pleasant Hill Rd/ Old Tunnel Rd- SR 24 Eastbound Off-Ramp	AM	10	A	11	B	11	B	10	A	10	A
	PM	13	B	13	B	13	B	13	B	13	B
43. Pleasant Hill Road/ Condit Drive	AM	10	A	10	A	10	A	10	A	10	A
	PM	8	A	8	A	8	A	8	A	8	A
44. Pleasant Hill Road/ Olympic Boulevard	AM	92	F	95	F	98	F	95	F	95	F
	PM	73	F	76	F	74	F	76	F	76	F
45. Happy Valley Road/ Mt. Diablo Boulevard	AM	30	C	30	C	30	C	30	C	30	C
	PM	39	D	39	D	39	D	39	D	39	D
Moraga Intersections											
11. Moraga Way/ Moraga Road	AM	33	C	36	D	35	C	36	D	37	D
	PM	38	D	47	D	41	D	44	D	46	D
29. Campolindo Drive/Moraga Road	AM	24	C	24	C	24	C	24	C	24	C
	PM	20	B	21	C	20	C	20	C	20	C
30. Rheem Boulevard/ Moraga Road	AM	23	C	23	C	23	C	23	C	23	C
	PM	23	C	23	C	23	C	23	C	23	C
31. Moraga Road/St. Mary's Road (South)	AM	14	B	17	B	16	B	16	B	16	B
	PM	14	B	19	B	16	B	18	B	18	B
36. Bollinger Canyon Road/St. Mary's Road	AM	5 (32)	A (D)	5 (36)	A (E)	5 (34)	A (D)	5 (34)	A (D)	5 (35)	A (D)
	PM	3 (22)	A (C)	3 (25)	A (C)	3 (24)	A (C)	3 (23)	A (C)	3 (24)	A (C)
37. Rheem Boulevard/St. Mary's Road	AM	12 (59)	B (F)	14 (72)	B (F)	14 (71)	B (F)	13 (68)	B (F)	14 (72)	B (F)
	PM	14 (79)	B (F)	20 (117)	C (F)	17 (95)	C (F)	18 (107)	C (F)	18 (107)	C (F)

Table 4.F-15

Cumulative Baseline Intersection Level of Service Results (AM and PM Peak Hours)

Study Intersection	Peak Hour	Cumulative – No Project (Alternative 1)		Cumulative With Proposed Project		Cumulative With Alternative 2 (339 units)		Cumulative With Alternative 3 (400 units)		Cumulative With Alternative 4 (560 Units)	
		Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS	Delay/2/	LOS
38. St. Mary's Parkway/St. Mary's Road	AM	4 (18)	A (C)	4 (21)	A (C)	4 (19)	A (C)	4 (21)	A (C)	4 (21)	A (C)
	PM	6 (18)	A (C)	8 (22)	A (C)	7 (19)	A (C)	7 (21)	A (C)	7 (22)	A (C)
46. Center Street/ Rheem Boulevard	AM	9	A	9	A	9	A	9	A	9	A
	PM	10	A	10	A	10	A	10	A	10	A
47. Moraga Road/Ascot Drive	AM	11	B	11	B	11	B	11	B	11	B
	PM	9	A	9	A	9	A	9	A	9	A
48. Moraga Road/Donald Drive	AM	13	B	13	B	13	B	13	B	13	B
	PM	7	A	7	A	7	A	7	A	7	A
49. Moraga Road/Corliss Drive	AM	50 (444)	E (F)	73 (723)	F (F)	64 (606)	F (F)	66 (627)	F (F)	72 (704)	F (F)
	PM	15 (162)	B (F)	31 (387)	D (F)	22 (251)	C (F)	26 (314)	D (F)	29 (365)	D (F)
50. Moraga Way/ St. Andrews Drive	AM	13	B	13	B	13	B	13	B	13	B
	PM	13	B	14	B	14	B	14	B	14	B
51. Moraga Way/ School Street	AM	10	A	10	A	10	A	10	A	10	A
	PM	12	B	13	B	13	B	13	B	13	B

Notes:

Bold font indicates unacceptable traffic operations based on each jurisdiction's LOS policies

/1/ Signal = traffic signal, SSS = side-street stop, AWS = all-way stop

/2/ Signalized and all-way stop controlled intersection LOS based on average intersection control delay according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies. Side-street stop controlled intersection LOS based on the delay for the worst minor street approach (shown in parenthesis) according to Highway Capacity Manual (Transportation Research Board, 2000) methodologies.

Source: Fehr & Peers, 2008

4.F-5 PREPARERS AND REFERENCES

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